

Valentin Demenkov

Improvement of documentation flow and quality in airfreight

Lufthansa Cargo export cargo trip-files project

Helsinki Metropolia University of Applied Sciences

Bachelor of Business Administration

International Business and Logistics

Thesis

18.03.16

Author(s) Title	Valentin Demenkov Process and documentation quality improvement
Number of Pages Date	68 pages + 3 appendices 19 March 2016
Degree	Bachelor of Business Administration
Degree Programme	International Business and Logistics
Specialisation option	
Instructor(s)	Kaija Haapasalo, Senior Lecturer Arne Fischer, Handling Manager, Lufthansa Cargo AG
<p>This thesis is based on the export cargo trip-files checks project, between Lufthansa Cargo (LCAG) and Swissport Oy (SWP) at the airport of Helsinki-Vantaa in Finland. Thesis aim is to improve documentation flow and quality in airfreight. Every station (airport) might have different set-ups of handling activities for the same carrier. In case of Helsinki, LCAG company has a contract for performing handling activities such as; operational air cargo handling management, load planning, optimization, and trip-file creating with SWP. Trip-file is a set of documents dedicated to every outbound flight, which carries cargo on board. Trip-file contains all legally mandatory documents and operational messages, either digitally in IT-systems or as hard-copies with signatures in the folders. Trip-file creating is one of the activities which SWP performs as ground handling agent (GHA) for LCAG. Trip-files checking is the process performed by LCAG along with monitoring of other quality key performance indicators, in order to evaluate quality of job performed by GHA. It is particularly important because LCAG either pays monthly bonuses for good performance, or charges GHA for mistakes made based on quality indicators.</p> <p>The thesis is an action based research and its main target was to improve data creating, storing and transmitting quality between companies through process change. The secondary target is to eliminate archiving types of mistakes in trip-files and to decrease unnecessary additional work performed by GHA's employees. In order to understand the context and to perform the project, three topics were studied before the project started. The first topic was an introduction to the reader of the air cargo industry and parties involved in the air transportation on general level. The second was typical contract relationship between cargo carrier and GHA under standard ground handling agreement (SGHA). Third topic was export cargo process in detail, as well as current documentation creation, storing and checking processes.</p> <p>The targets of the project were reached because of maximum use of IT system available at the GHA's facility. Changes to the process were made according to the "action research cycle" and "7 steps decision making model". Outcomes of the implemented solution were measured in quantitative and qualitative measures and confirmed to be successful by both scales. Quantitative measure was based on internal trip-file checks annual statistics. Qualitative measure was measured by collecting and analysing for qualitative questionnaire from parties involved in the project.</p> <p>This thesis presents main parties involved in air transportation and gives detailed insight view to the complexity of air cargo export processes, which are usually behind the scene.</p>	
Keywords	Air freight, GHA, trip-file, action based research, IATA

Contents

List of tables and figures	iii
1 Introduction	1
1.1 Objectives and research questions	3
1.2 Methodology	4
1.3 Limitations	8
1.4 Companies profiles	8
1.4.1 Lufthansa Cargo AG	8
1.4.2 Swissport Finland Oy	9
2 Cargo handling processes and parties involved	10
2.1 Freight Forwarders	12
2.2 Mail companies	12
2.3 Agent types for airlines	14
2.3.1 General sales agent (GSA)	14
2.3.2 Ground handling Agent (GHA)	15
3 Shipment planning and monitoring system	16
3.1 Information flow in the transportation chain	19
4 Evaluation and monitoring of GHA's performance	21
4.1 LH-team build-up service unit	21
4.2 Legal grounds for evaluation and monitoring of GHA's performance	22
4.3 Current export flight preparation process	24
4.3.1 The export process from handling point of view	30
4.3.2 Flight preparation	31
5 Improvement of documentation flow and quality in air freight	41
5.1 Action based research	41
5.1.1 Current trip-file content and processes.	42
5.1.2 Customs documents	46
5.2 Observations. Project progress and outcome	48
6 Result and data analysis	51
7 Conclusions and recommendations	55

7.1	Conclusive remarks	55
7.2	Recommendations	57
8	References	62

Appendices

Appendix 1. Live Warm-blooded animal acceptance checklist example

Appendix 2. Process change concept mapping

Appendix 3. Trip-file Project's results evaluation. Qualitative questionnaire

List of Tables and figures

Figure 1. Complete Theory of action research	5
Figure 2. The action research cycle	6
Figure 3. 7 steps decision making model Vs action research cycle	7
Figure 4. Route map time line	17
Figure 5. Informational and material flows from shipper to consignee	18
Figure 6. MAWB consolidation concept	19
Figure 7. CIMP FSU messages against Material and informational flow	20
Figure 8. Helsinki station operational set-up	21
Figure 9. GHA activities monitoring breakdown	22
Figure 10. Detailed master operating plan and C2K milestones	24
Figure 11. MAWB in form of FWB message	26
Figure 12. House AWB in form of FHL message	27
Figure 13. Flow of messages between Agents, Airlines, GHAs	28
Figure 14. Parties involved in goods flow and messaging flow	29
Figure 15. Positive acknowledgment message example	30
Figure 16. Rejection message example	30
Figure 17. Information flow versus material flow at the terminal	31
Figure 18. Warehouse activities flow	34
Figure 19. LDM message and explanation	37
Figure 20. CPM message example	37
Figure 21. Movement message example	38
Figure 22. FFM message example	39
Figure 23. UCM message example	40
Figure 24. C2K milestone against system transactions	40
Figure 25. Action based research plan	41
Figure 26. Trip-file's structure	42
Figure 27. Trip-files check data during year 2015	51
Figure 28. Trip-file's March to October 2015 mistakes' nature	52
Figure 29. Document management system distinctive features	58
Table 1. Trip-file's content breakdown	43
Table 2. Document management system's key elements	58

Abbreviations

A2A	Airport to airport
AWB	Air Waybill
C2K	Cargo 2000
CAO	Cargo aircraft only
CIMP	Cargo Interchange message procedures
CPM	Cargo position message
DEP	Flight Departure
DLH	Deutsche Lufthansa passage
DPO	Designated post operators
FAP	Flown as Planned
FFM	Airline flight manifest message
FHL	House airwaybill extract in form of the electronic message
FMA	Positive acknowledgement message
FNA	Negative acknowledgment message
FSU	Functional service update message
FSU-OFLD	Functional service update message Off-load
FSU-SSPD	Functional service update message short shipped
FWB	Electronic AWB
GHA	Ground handling agent
GSA	General sales agent
HAWB	House Air Waybill
IATA	International Air Transport Association
IMDG	International maritime dangerous goods transportation rules
KPI	Key performance indicator
LAT	Latest Time of Acceptance
LCAG	Lufthansa cargo AG
LDM	Load distribution message
MAWB	Master Air Waybill
MOP	Master Operating Plan
NFD	Notification of the Consignee
R4C	Ready for carriage
RCF	Received from Flight
RCS	Shipment Received from Forwarder
RFS	Road feeder service
SGHA	Standard Ground Handling Agreement

SLA	Service level agreement
STD	Scheduled Time of Departure
SWP	Swissport Finland Oy
TOA	Time of Availability
UCM	Unit control message
ULD	Unit Load Device
UPU	Universal postal union

1 Introduction

During work placement at Lufthansa Cargo AG (LCAG) the author of the thesis was involved in export cargo trip-file project. Aim of the project was to redesign process of trip-file checks. Targets of the project were to make process easier, more transparent, improve quality of documents, quality of data transition and, at the same time, comply with Lufthansa legal frames. Trip-file checks is a part of routine process which has been performed by LCAG in order to monitor quality of work done by ground handling agent. Swissport Oy (SWP) is the ground handling agent (GHA) for LCAG, and currently LCAG purchases operational air cargo handling management, load planning and optimization from it. LH-team is a special build-up on the top of Swissport, especially dedicated unit to do only LCAG shipments acceptance, follow-ups and handle export irregularities. LH-Team is also mostly involved in trip-files' preparation. Detailed explanations about parties mentioned above will be given later in this thesis.

Trip-file itself is set of documents, mandatory for outbound flights. Conditionally we can divide documents into types of their origin; hard copy document or digital (system transactions). Current set up was designed in such a way that SWP archived mandatory hardcopy documents for LCAG in folders. Transactions, which are also part of trip-file, were done in the IT-systems and then printed out and archived together with hard-copy documents as well. This was the existing process to provide access for LCAG to necessary data.

There was a proposal made by both companies, that there is a need to improve the whole process of trip-file's creating, storing and checks because current design of the process was outdated, required too much additional work and led to unnecessary mistakes in trip-files. LCAG requirements for this project were: data transmitting improvement between companies, better document flow, improving quality of the data, easily available flight documentation and process simplification. SWP management wanted a simplification of the process and decrease in mistakes, especially those which were not process mistakes as such but document archiving mistakes (e. g. transaction was done in the IT-system but printout was forgotten). LH-Team (final users of the solution) wanted to achieve a decrease of unnecessary work (printing out transactions). LH-Team is legally Swissport's employees, which are formed in a team of four persons to fulfil special LCAG's tasks on behalf of LCAG Company.

The project was initiated by LCAG in the beginning of August 2015. Data collection and studying of legal background took almost three months. Project milestone was the end of October, when research results and three solutions were presented to all interested parties: LCAG management, SWP Oy management and LH-Team. One of the solutions got approved and three phases of implementation were designed. The first and the most crucial phase was implemented immediately at the beginning of November 2015.

Since the new process flow implementation the data of the following five months was collected and comparing it to the old the old process flow by monitoring data of the of tripfiles

The process change was measured in quantitative and qualitative measures. Quantitative measurement was based on checking monthly internally the amount of checks per month and the amount of mistakes spotted. General data level was investigated further, in order to be able to identify the reasons which caused the mistakes. Qualitative research was performed with help of a qualitative research questionnaire, presented in Appendix 3 and by conducting an unstructured interview with all parties, involved in the project (LCAG's and SWP's Oy management, LH-Team). Questionnaire was used for acquiring necessary data about the project and unstructured interview was an attempt to obtain some extra valuable qualitative information about project's outcomes and solution's implementation which lay outside of questionnaire's questions. This questionnaire, related to process improvement assessments, was given to all parties involved in the project. LCAG's was represented by handling manager of Finland and Baltic States. SWP's Oy management was represented by cargo operations manager. LH-team was represented by three LH-team member. All mentioned persons were willing to cooperate and filled in the questionnaire and took part in the interview.

Expected outcomes of the project were: increased quality of documents data and data transmitting, eliminating of documents filing mistakes, making trip-file creation and checking process more transparent and easier. Achieved improvements were supposed to lead to exemption of free time for operational unit LH-team, which they can use for customer service and other important job-related tasks. Finally, process improvement was supposed to bring financial benefits for both companies. For Swissport it would be better KPI indicators, which will be transformed into financial

bonuses from Lufthansa Cargo. For Lufthansa Cargo better service from GHA means happier customers, which will retain and bring new customers, which in turn will bring more cargo to Swissport terminal. This means, that more terminal fees could be collected by Swissport. Project goals were possible to reach because of maximum use of IT system available at the GHA's facility

1.1 Objectives and research questions

The main objective of this thesis was to improve existing trip-file creation, storage, data transmitting and check process by developing a solution, which will suit to all interested parties. For that reason, understanding the context and general functioning of the industry is vital. This thesis is also providing information about airfreight industry specific operation. While writing the thesis and at the same time performing the project, it was noticed, that operational knowledge described in this work is not commonly known and easily available. This thesis contains information, which is possible to gather only in practice or via expensive IATA courses. That is why the author has been trying to examine and present the industry, shipment booking process and export activities at the terminal as detailed as possible. Knowledge gathered in this thesis is beneficial to share around the air freight industry, freight forwarders, shippers, consignees and university graduates, who want to become experts in logistics.

In order to perform a project and present a clear and comprehensive picture of the airfreight industry, four preliminary research questions were answered and peculiarities of export process were presented before concluding the research.

Who are the clients of the cargo terminals? Where and how does the cargo terminal earn profit?

The Answer for this question will help to get broader view of the industry. At the same time it will present relationships between parties involved and about money flow circulation. Money circulation is important as it partly explains who has the negotiation power in the business

What types of agents does a cargo airline have?

The answer to this question will present airfreight industry from airline's perspective.

What is C2K industry's standardization benchmarking tool and how does the informational flow function?

The answer will give us basic knowledge about air freight industry. It is not possible to understand logics behind the industry (processes) without it.

What is main document, which regulates contractual relationship between airline and ground handling agent? How does this document regulate the relationship?

The answer to this question will provide legal background for the operations.

What is an export flight preparation process?

This contains exclusive and complicated knowledge about export processes. This makes the thesis also valuable as a descriptive document.

After the questions raised above are answered and export shipments particularities explained, the reader will understand the "trip-file project" context and is able to follow the process improvement.

The project was an attempt to utilize available IT-tools at the maximum level in order to optimization work flow and reduce the amount of mistakes and time spend for the same job. Also project's targets were data transition and quality of data improvements.

1.2 Methodology

This thesis is an action based research. It means, that in this work theory clashes with reality. When performing an action research Coghlan and Brannick (2010) suggest taking into consideration four groups of factors, which are presented in Figure 1 and discussed in the following paragraphs.

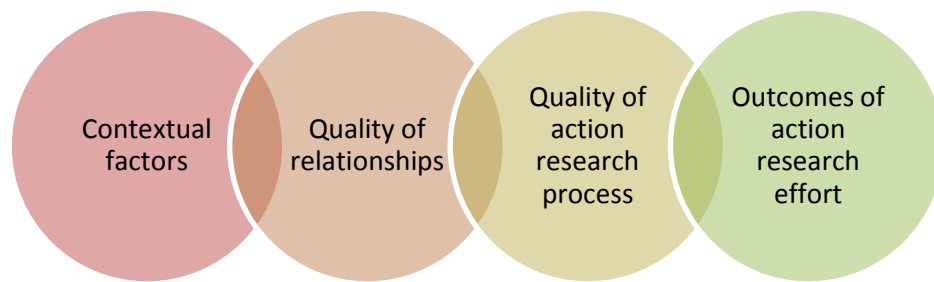


Figure 1. Complete Theory of action research (Shani and Pasmore, 2010 cited in Coghlan and Brannick, 2010, p.5, adapted)

For the first circle “contextual factors” authors suggest to take into consideration: individual goals of persons involved, organizational characteristics and environmental factors. In terms of this thesis fortunately individual goals were in line with the project because successful result was supposed to bring mutual benefits for both companies involved. Organizational characteristics were studied on the macro level (how big companies are globally) at the beginning of the project and then narrowed to the Helsinki station in order to identify relationship between organizations and negotiation power they have locally. Environmental factors such as global and local economies were not taken into account since they had no effect on this particular project.

The second circle points to the quality of the relationship, which is paramount for performing a good research. It is easier to implement new idea/solution among favourable audience. In terms of this project and thesis, the author was lucky, because on the top of contractual obligations between SWP and LCAG also good relationships based on mutual respect existed. Author established good relationships with LH-team, who are the final users of the project results. This helped to avoid possible abruption of project outcomes and implementation.

The third circle indicates how to measure a quality of action research. Two parts of action research must be in focus when assessing it: Inquiry process and implementation process. Inquiry process was partly measured by using qualitative questionnaire, available in Appendix 3.

The fourth circle tells the reader how to measure outcomes of the research. The first criterion is to achieve some level of sustainability (human, social, economic or ecological). This project aimed at positive social and economic change for both companies, which were tested in quantitative and qualitative measurements by using

statistical data, qualitative questionnaire from Appendix 3 and unstructured interviews. Second criterion is to create through research a new knowledge or develop self-competence, which has happened to both companies and to the thesis's author.

There was a clear project target set by LCAG. The trip-file itself and its creation and checking processes had a need to be improved. As was discovered later, this issue has been in the air for a few years already. Goals for the project were set by Lufthansa cargo as follows: better quality of documentation, process simplification and easy available flight documentation. Swissport management wanted simplification of procedures as well and avoiding of unnecessary mistakes. LH-team (final users of the project's outcomes), wanted to decrease unnecessary work. Start of the project was a context and purpose understanding. Action research cycle, displayed in Figure 2 was taken as a model for action.

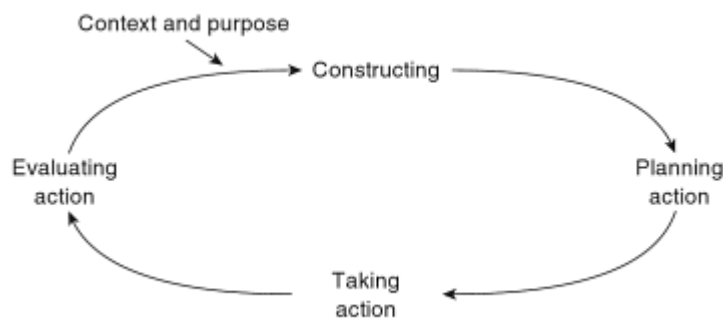


Figure 2. The action research cycle (Coghlan and Brannick, 2010)

Action research cycle points that action research in the organisation is a closed circle. Project's purposes were clearly defined by parties involved, but understanding by the author the context of the project (legal and operational) took three months and is presented in this chapter later. Action research cycle checkpoints were plotted on the "7 steps of decision making model", presented in Figure 3. This plotting gives detailed view on the action research process that took place in this project.

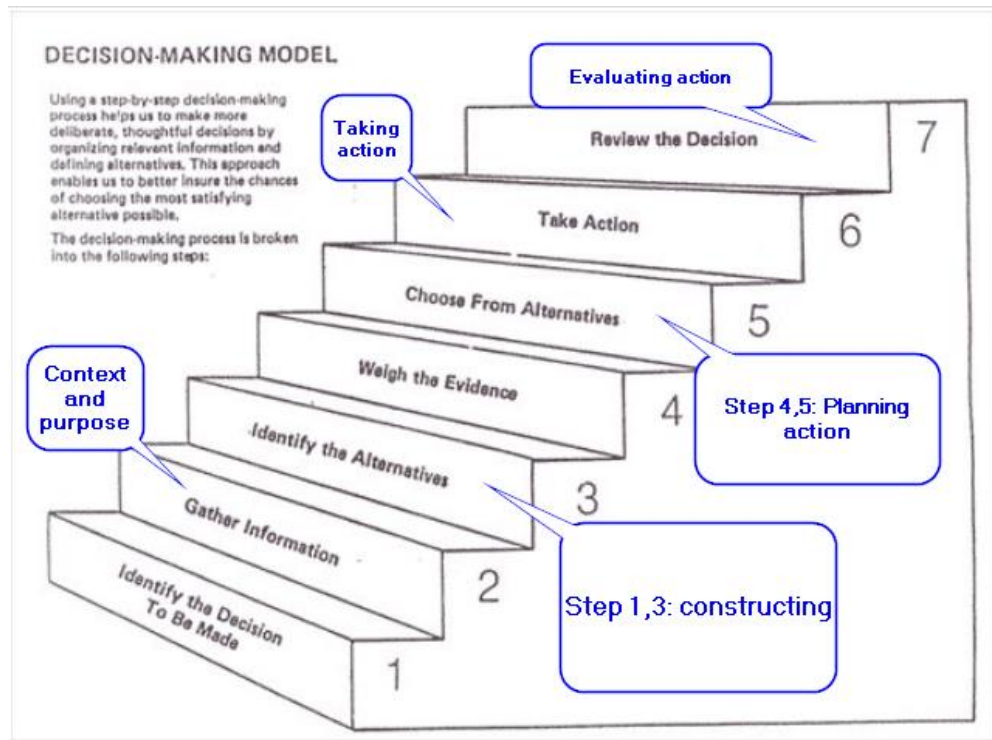


Figure 3. 7 steps decision making model Vs action research cycle (Umassd.edu, 2016, adapted)

Combination of “7 steps decision making model” and “Action research cycle”, presented in Figure 3, gives solid theoretical grounds for performing this project. Due to the project specificity, steps one and two were cross-placed. Even though target was set from the beginning, first step “identify the decision to be made” was done as step number 2, only after information gathered and context understood.

This thesis is structured in 7 chapters. The introduction chapter presents goals of the study and formulates the research questions to be answered, before performing an action based research. From chapter 1 to chapter 4 an industry review is provided and parties involved are identified. These chapters are matching first box from Figure 1, understanding of the contextual factors. Chapter 4.3 presents unique data, of export process at very detailed level, gathered during internship. During acquiring understanding of the process author was closely interacting with field work performers, the LH team. Constructive interaction led to establishing good relationships which led in turn to project facilitation. Action based research, based on trip-files project is presented in chapter 5. Project’s preliminary work inquiries were performed in chapter 5 and project implementation is explained there as well. Author’s personal engagement

in the project and understanding of its significance helped to achieve good performance level thorough action-based-research process. Research evaluation is described in chapter 6. Chapter 7 is dedicated to conclusions and recommendations.

1.3 Limitations

The same carrier might have operational set up at each station, and this is the main limitation of the thesis. Since this project was implemented in Helsinki-Vantaa airport, project outcome is only relevant to Helsinki-Vantaa Airport. Project key elements are: carrier has own sales branch in the area, cargo handling agent activities are outsourced. GHA is using Cargospot as main handling system, since there were no opportunities to try to perform same project with another GHA/IT-system. Most descriptions and functions of GHA and GSA are narrowed to cargo part only since author's internship was held in all-cargo airline. Project scope is one trip-file, which is dedicated to one export flight. Hence project scope might be also described as one export flight.

1.4 Companies profiles

1.4.1 Lufthansa Cargo AG

LCAG is subsidiary of Deutsche Lufthansa AG. At the same time LCAG owns several other companies. "Handling counts" GmbH (shares 100%), is the warehouse operator for Lufthansa in Frankfurt. Frankfurt is the main hub of the company. When the scope of operations is big, as in Frankfurt, then it is wise to have own staff in the house. Another company under LCAG is a unit-load-device (ULD) steering and leasing company, Jettainer GmbH (100%). ULDs are expensive and airlines want to have only necessary amount of them at each station and not surplus. Jettainer steers ULD's distribution for LCAG, as well as gives ULD's for lease to other airlines. One more company, which is appropriate to mention in terms of cargo, is a joint venture of DLH and DHL, the all-cargo carrier AeroLogic GmbH (50%). One more company partly owned by LCAG is express delivery courier company "time:matters" GmbH (49%). This company, among other services, provides same-day-shipment with door-to-door delivery within Europe. In other joint ventures LCAG does not have a significant

amount of shares and that is why they are not mentioned here. (Lufthansa-cargo.com, 2016)

The main base of LCAG is Frankfurt airport. Secondary hubs are Vienna and Munich. Company's hierarchy is divided into four areas; Helsinki station is number third in the management hierarchy with its own area; with main headquarters in Frankfurt and second level headquarters is Stockholm. At the same time Helsinki is a headquarter for Finland and Baltic countries: Estonia, Latvia and Lithuania.

LCAG utilizes two types of own all cargo aircrafts (freighters); McDonnell-Douglas MD-11F (16 aircrafts) and Boeing 777F (5 aircrafts). Legally LCAG buys belly capacities on Deutsche Lufthansa's and Austrian Airlines' passenger flights, and capacities on B777F of the joint venture with DHL AeroLogic. One more important transportation option in goods transportation is Road feeder services (RFS). RFS means trucks, which are feeding or de-feeding goods to/from airport. (Lufthansa-cargo.com, 2016)

LCAG's Helsinki station is linked daily to Frankfurt and Munich by three narrow-body flights to each destination. Also Helsinki is linked to Frankfurt with overnight capacity on freighter aircraft from external supplier and regular RFS connections to Frankfurt and Munich. Tallinn, Riga and Vilnius are connected with passenger flights of Deutsche Lufthansa to Frankfurt only, twice per day. Vilnius has also one more connection to the secondary hub Vienna with passenger flights of Austrian airlines, once per day. Frequent RFS trucks help to keep up with capacity on demand. LCAG's Helsinki sales branch consists of 12 employees, among them 2 interns. Sales force is grouped into the three teams with different sales targets and clients for each team. Helsinki is also unique station for LCAG due to the fact that the carrier (LCAG) and GHA (SWP) are creating symbiosis and synergy, which is not common for "Client-Service provider" relationships. Results are outstanding quality, but more work load for LCAG managers.

1.4.2 Swissport Finland Oy

Today, it is estimated that more than 50% of all handling is carried out by independents and this growing handling business is estimated to be worth annually US\$80bn, with more than 1,000 ground handling players worldwide (Groundhandling.com, 2015).

Swissport Finland Oy is part of Swissport international LTD, which was recently bought by China's HNA group co. HNA group also owns China's fourth biggest airline "Hainan Airlines" and sea container leasing company SeaCo Srl (Bloomberg.com, 2015). This acquisition happened in July 2015, but seems to have no local effect on Helsinki station in workforce or management level. Swissport Oy is independent and airline-neutral ground handling agent. It means that the same scope of services at same quality level will be provided to every handled airline regardless the size of the airline and freight volume (Swissport.com, 2016).

Company operates approximately 120 warehouses and with a help of some 61,000 employees moves annually around 4.1 million tons of Cargo. Swissport is present in more than 290 stations (airports), in some 48 countries worldwide (Swissport.com, 2016).

In Finland Swissport is represented by one station, Helsinki-Vantaa. Swissport in Helsinki-Vantaa had two legal entities; Swissport cargo services and Swissport ramp. During the internship of the author and thesis process, two legal entities became one, named Swissport Finland Oy. Swissport Finland Oy cargo department (former separate legal entity) has approximately 80 employees (office and terminal workers) and handles such airlines as: Aeroflot, Air Bridge Cargo, Air Baltic, Air France – KLM, Lufthansa, Norwegian, Scandinavian Airlines, and Turkish Airlines. Swissport Oy at Helsinki-Vantaa provides such services as: cargo security screening, ready for carriage service, bonded warehousing, ULD control and management, full freighter ramp handling, cargo and mail handling, back office support, full export & import document handling including AWB check & data capture, planning & disposition (Swissport.com, 2016). Some of the named activities will be presented later in this thesis.

2 Cargo handling processes and parties involved

Everyone wants to ship cargo fast and secure and that is why secure supply chain in airfreight exists. Secure supply chain for air cargo means that individual members perform security controls and protect secured consignments from unlawful interference throughout their journey. "Potential actors in the secure supply chain are account

consignors or known consignors, which originate cargo or mail and regulated agents that screen and/or forward cargo or mail to air carriers, which are the final node. Known and account consignors are typically manufacturers of the cargo” (Ec.europa.eu, 2016). In the EU, all actors in the secure supply chain need to be approved by the aviation security authority of an EU Member State. An appropriate authority, in Finland is TraFi. Transportation chain should not be interrupted or duplicated the same security activities in order to speed up delivery. If secure chain is interrupted at any point of transportation, for example RFS truck arrives without seal or with not properly fixed door cable, which led to the fact that doors could be opened and closed, security screening will be performed again. New screening costs time and money. Swissport as cargo handling service provider is authorized to do security screening and dangerous goods acceptance (Swissport.com, 2016).

There is a cargo terminal duopoly in Helsinki-Vantaa airport. If shipper wants to pass goods through security control and be delivered to the aircraft, then you will choose between Swissport and Finnair cargo, based on the airline you booked cargo to fly. It is appropriate to mention that Swissport owns and operates in own facility with help of own employees. Contrary to it, Finnair cargo owns its facility but warehouse operator is Transval for them. There are three more limitations to aforementioned. First, if regulated agent (trusted air freight chain link) will deliver secured (screened by them) general cargo, then freight will by-pass security screening but the agent will still pay export handling fee. Second, integrators are different. Such companies as DHL and TNT have own access to the airfield, warehouse and security screening, and UPS has the right to pass security gate on the own sealed truck for loading goods into own aircraft. Third limitation to above mentioned is off-the-airport cargo terminal concept.

ASR cargo center is the company located nearby the airport, but has no own access to air field. They are focused on RFS services for airlines which are not present in Helsinki. ASR company describes themselves as a neutral 3rd party service provider and states that “over 70% of all air cargo to/from/via Finland is trucked today” (Cargo-center.com, 2016). This gives the company the opportunity to get big share of the Finnish market.

2.1 Freight Forwarders

Swissport as cargo service provider charges customers for services provided. There are several things for which forwarders will pay to Swissport. Outbound there is general “export handling and terminal fee”, which forwarder must pay due to shipment passing through the terminal to airfield. On the top there are fees for security screening for unknown consignor. If goods physics does not match to airwaybill or booking, then deviation fee will be imposed. If product is special, such as dangerous goods or live animal, extra fee will be collected for acceptance check. For inbound handling there is general handling fee and release charge. On the top there is a storage fee which can be avoided, since notification for delivery day and the following weekday is free of charge. Swissport has relatively small warehouse and the idea of having it small is that shipments come and go fast. Therefore “motivation” progressive tariff is used. The longer shipment is at the Swissport facilities, the bigger the charge per day will be. Money is good motivation for picking up goods fast. Swissport charges and progressive daily storage cost structure can be found on-line at Swissport official web site (Swissport.com, 2016).

2.2 Mail companies

Historically mail is not cargo and mail companies used to be national mail companies, one per country. Nowadays airmail is cargo and mail companies have become more like freight forwarders, but not completely. Since 1911, the Designated Post Operators (DPO) of the world have counted on the airlines to provide fast and reliable services for their mail products. Airlines are also keen to keep an activity that represents around 10% of their cargo business (Iata.org, 2016). Nowadays International Bureau, known as Universal post union, is functioning to create guidelines and standardize processes worldwide. For Finland and Baltics it is fair to say, that for some stations, which were monitored during the internship, volume of incoming mail measured in “scale weight” per month, is greater than import cargo weight. It confirms contemporary situation that mail becomes cargo.

First thing which differentiates cargo and mail is a contract of carriage. Main contract of carriage for cargo is Airwaybill, but for mail it is a delivery bill, which can be done in one of different contract forms (CN 37, CN 38, CN 41 or CN 47), or they can be replaced

nowadays electronically by CARDIT message. The CARDIT message is a consignment-level message, which is sent from a postal operator to a carrier (airline) and contains information about a consignment of mail handed over to a carrier (UPU, 2016). Second difference is a terminal fee, charged by GHA. GHA charges differently mail companies in comparison to airlines or forwarders. Price for mail companies is usually “all in” per unit (might be 100kg or 1t); Terminal and security fees are usually inside all-in tariff. Third and most sufficient difference is that forwarders are trained industry professional who know how to ship, declare and label goods. In case of mail companies, it is generally the opposite. Common post employee, when accepting parcels for air transportation, has no idea about IATA dangerous goods rules, or rules of carriage of lithium batteries.

Nowadays, equipment works on li-ion or li-metal batteries. Hence, there is no chance to stop the trade and shipping of batteries. Lithium batteries are dangerous for carriage due to the fact that they are easy to ignite by themselves if damaged or contacted with another metals. Furthermore it is extremely difficult to stop the fire. Rules and reasons for lithium batteries restrictions are explicitly described for example on the UK Civil Aviation Authority web-site. In order to make this process safer and easier for everyone, special setup is established, accordingly to the European Union resolutions.

“The European Union has a robust and well-established air cargo and mail security regime wherein all cargo and mail must be physically screened or come from a secure supply chain before being loaded onto an aircraft. Purpose is to ensure the absence of articles that could be used to commit an act of unlawful interference, such as explosive devices” (Ec.europa.eu, 2016).

Postal companies can get a right to ship li-ion batteries, if they get an approval from local civil aviation authorities. In Finland this authority is TraFi. This approval will automatically list mail company on UPU’s list of authorized mail companies. This could be enough, but sometimes there is a third step; approval by the carrier. Recently Posti Ltd has gotten an approval from TraFi and since 1st of January 2016, it has the right for accepting equipment, which contains admissible lithium cells as mail. (Upu.int, 2016)

Airmail is nowadays a headache for the GHA’s. Most common issue is shipping of Li-Ion batteries and Li-Metal batteries, as well pressurized gases and flammable liquids. When those are shipped as cargo, it is mandatory for them to be checked, packed and labelled accordingly. In case of airmail, we generally face person-to-person business, basically internet shopping. Very often seller has no idea about the IATA regulations

and packaging instructions. Recent case, when Panzer-Faust grenade was found in the air-mail at security screen in Vilnius cargo terminal, indicates importance level of the problem. On 19th of November 2015 in one of the parcels from air-mail it was found a moulage of Panzer Faust grenade without explosives inside. Cargo terminal work was interrupted for several hours and bomb squad was called to analyse the moulage (Ru.euronews.com, 2016).

2.3 Agent types for airlines

There are many factors which affect airline's operational set-up at each station. Two main factors will be presented in this chapter. First is the presence of own sales branch at the station or GSA. Second is existing of own ground handling at the station or GHA.

If an airline has own ground handling staff at the station, then it is most likely to be the hub station. For LCAG examples of these are Frankfurt, Munich and Vienna. When operations scale is significant enough to have own sales staff at the station, then company establishes own sales branch but buys ground handling services from ground handling agent (GHA). As an example for LCAG this is in Helsinki. LCAG heavily relies on Swissport in day-to-day operations. Cargo handling and flight optimization is always done in Swissport terminal for all three types of transportation out of Helsinki; passenger flights, Freighter flights, and RFS. If station is relatively new or operations scale is small, it is economically not wise to have own sales office. Then the airline contracts general sales agent (GSA) to represent airline. For the same economical reason airline buys ground services from local GHA. LCAG's station examples with GSA and GHA are Tallinn, Riga, and Vilnius. LCAG's GSA in Tallinn is "Airproxy" (Airproxy.ee, 2016) and GHA is "Cargo handling" (Ch.ee, 2016). In Riga LCAG is represented by the same GSA "Airproxy" and handled by "AG handling" (Aghandling.lv, 2016). In Vilnius LCAG is represented and handled by "Litcargus" (LITCARGUS, 2016).

2.3.1 General sales agent (GSA)

A general sales agent (GSA) is a sales representative for an airline in a specific country or region. Usually GSA serves more than one airline at the same time and declares themselves as neutral to every carrier. GSA, besides sales, does on behalf of the airline also representation, marketing and market reports to the airline that gives airline

up-to-date statistical data for further decisions related to the station. GSA as representative of the airline has access to the airline's booking systems, knows special products and products restrictions, and understands particularities of those. GSA creates and maintains booking reservations on customer's request, handles irregularities and does follow-ups of discrepancies exactly the same way as own airlines sales team would do. (Crossracer.aero, 2016). Several examples of GSA's in Helsinki area are: Kales airline service Oy, Nordic GSA Oy and Nordic air Oy.

2.3.2 Ground handling Agent (GHA)

Airlines and GHA are in symbiosis. GHA provides services and Airlines bring customers to the terminal. Therefore this gives a GHA an opportunity to charge a terminal fee and other fees from forwarders/consignees. This is why GHA's is more loyal to airlines. Each airport usually has several service providers and they compete for handling of the airlines. The fee which cargo handling provider charges the airline is confidential, contrary to publically available import/export charges for freight forwarders and consignees.

Official IATA definition for Ground handling agent is: The entity authorized to act for or on behalf of the carrier, for accepting, handling, loading/unloading, transiting, or dealing with cargo, passengers and baggage (IATA, 2009).

Ground handling agent's (GHA) physical activities in terms of cargo operations could be divided into two parts; Ramp handling and Terminal Cargo handling. Ramp services include: moving cargo to/from aircraft, loading and unloading of cargo, push back and taxiing of the aircraft. Terminal cargo services could be subdivided into terminal handling and documentation (information) handling. Terminal handling examples are; building-up and breaking down transportation units, loading ULDs, control ULD's stock and serviceability. Documentation (information handling) examples are acceptance of general cargo and special cargo, performing ready for carriage checks (matching physics to AWB and booking), release of operational messages in the IT-systems and performing tracing actions. Currently in Helsinki we have four GHA's; Aviator (ramp services only), Finnair cargo (cargo handling services only), Swissport (ramp and terminal cargo services), and Airpro (Finavia daughter company, ramp services only). ASR-Cargo is the fifth GHA in the Helsinki but located "off the airport" and it currently

has no access to runway. Therefore, they provide services only to RFS and their business differs from the first four GHAs aforementioned.

3 Shipment planning and monitoring system

“C2K is an air cargo industry standard quality and benchmarking tool for freight forwarders and air carriers. C2K is a system of shipment planning and performance monitoring for air cargo based on definition of common business process and milestones” (lata.org, 2015).

The kernel of the process is master operating plan (MOP) or route map against which shipment progress is monitored. There are three types of MOPs. Relative to the carrier is Airport to airport (A2A) master operating plan, concerning master AWB level. Definitions and explanations for HAWB and MAWB will be provided later in this chapter. Figure 2 shows parties involved in the goods transportation from Shipper(S) to Consignee(C) and steps involved. In this thesis due to the research limitations we will talk about A2A master operating plan only (airline's part). Accordingly to IATA it consists of 7 steps, which is highlighted with green in Figure 2.

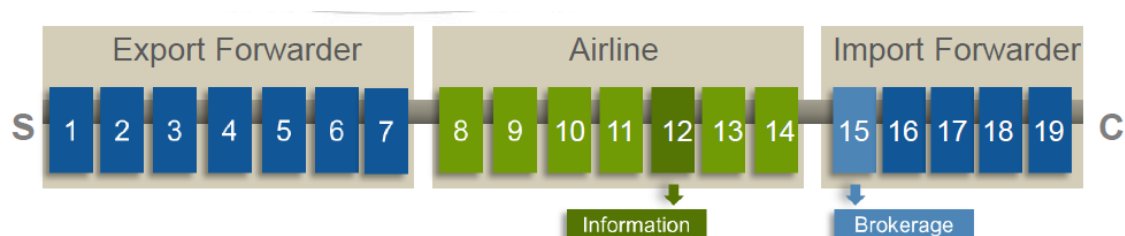


Figure 2. Master operating plan types (lata.org, 2015)

These 7 steps are also called C2K's milestones (Air-cargo-how-it-works.blogspot.de, 2011) and they are:

1. FWB - The shipment is booked at the airline. Next an electronic air waybill is generated by agent (forwarder). This creates the so-called route map in C2K in which all the steps are followed.
2. RCS - Cargo and documents are received as 'Ready for carriage'(R4C) and accepted by airline or GHA on behalf of airline. R4C means that goods' physical characteristics (dimensions, volume, amount of pieces and descriptions) match

booking and AWB. At the same time shipment must be accompanied by proper documents, packed in airworthy package and labelled accordingly to IATA's rules. If there is a mismatch in any of these, shipment must not be accepted. If there is a deviation in physical characteristics above tolerance level set by airline from booking and from AWB, then AWB and booking must be amended, which may lead to the quotation correction.

3. DEP - Cargo and documents departed at airport of origin.
4. ARR - Cargo and documents arrived at airport of destination.
5. RCF - Cargo has arrived in the cargo bay at final destination. Cargo and air waybill are administratively received in the system.
6. NFD - Cargo and documents ready for pick-up at airline's or GHA's facilities. The customer (forwarder) is notified.
7. DLV - Cargo and documents delivered to customer (forwarder)

Figure 4 shows IATA's example of master operating plan (route map) and actual sequences of events. Three key milestones which LCAG monitors in day to day routine are: received from shipper (RCS), departed as planned (DEP), notified for delivery as planned (NFD).

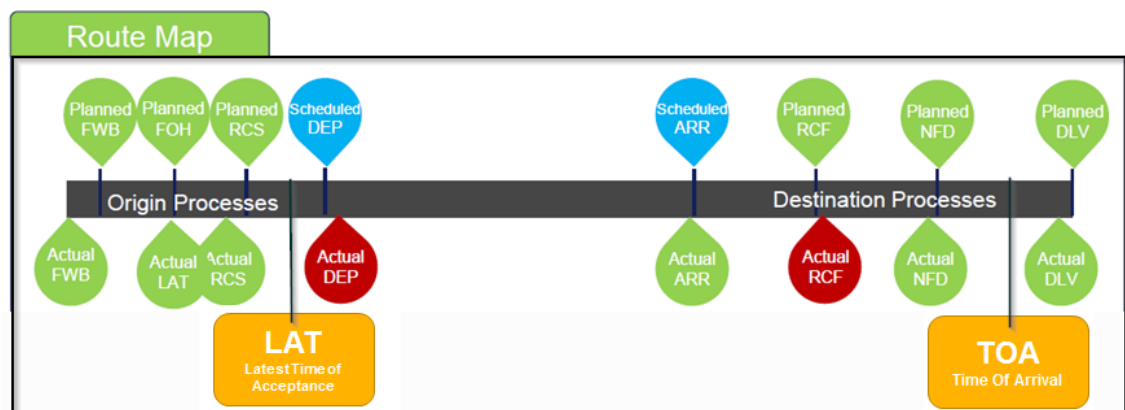


Figure 4. Route map time line (IATA.org, 2015, adapted)

Airline has an obligation to deliver goods as promised (TOA), if customer delivers R4C goods before last time of acceptance (LAT) for performing RCS. This is mostly what freight forwarders know about airfreight. Airline (or GHA on behalf of airline) must perform RCS before LAT or otherwise it will be C2K non-compliant case. Performing RCS on the same minute as LAT is set also treats as C2K non-compliant case. LAT

varies for different shipments' types but in general it is three hours before flight departure for LCAG's basic product "td.Pro" and two hours before departure for express products "td.Flash". Even though MOP is created in the moment of issuing of AWB by the agent (booking is done before in most cases and quotations are confirmed), all possible changes in the routing and booking could be made before RCS. At the moment of RCS responsibility for the freight is transferred from the agent to the airline and MOP is "sealed" and TOA is set. Goods' notification for delivery (NFD) after TOA is lead to the breach of the contract of carriage and possible legal consequences for the airline.

There are several documents involved in the shipping process. The first one is a contract of sale between shipper and consignee, based on which seller creates an invoice. Next level is a contract of carriage between forwarder and shipper called house airwaybill (HAWB). Master airwaybill is a contract of carriage between forwarder and the carrier. In terms of this thesis carrier is Lufthansa Cargo. Master Airwaybill might be issued for every single HAWB or it might be a consolidation document for several HAWBs. Informational and material flows between shipper-agent-carrier-agent-consignee are presented in Figure 5.

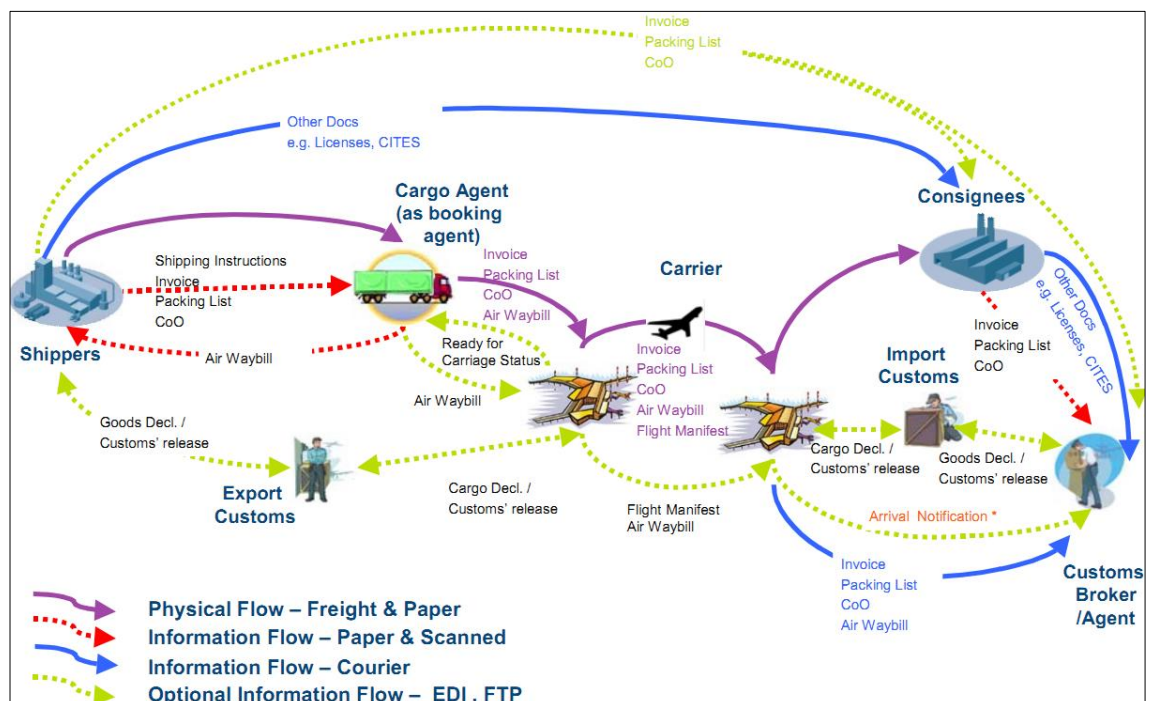


Figure 5. Informational and material flows from shipper to consignee (Iata.org, 2009)

This information flow is representing moving of set of documents, accompanying the shipment. It usually looks like sealed envelope with invoice, packing list and other relative documents and stapled on the top MAWBs copies. This scheme is presenting general level of material and transportation flow. More detailed level with transactions involved from IT systems will be presented later in this thesis. The concept of consolidation of several HAWB into one MAWB is presented in Figure 6.

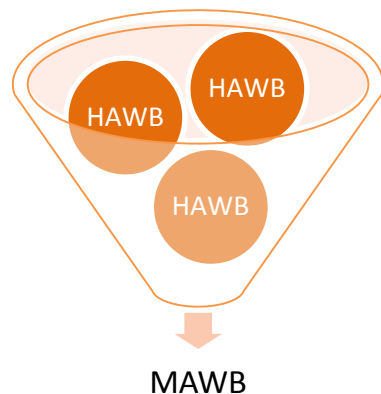


Figure 6. MAWB consolidation concept (Lufthansa Cargo, 2014)

Examples of consolidation are:

“Agent has several different shipments from several different consignees that have the same point of origin and destination. Solution for this case is: for every separate shipment a House Air Waybill (HAWB) is issued and for all the HAWBs consolidated a Master Air Waybill (MAWB) is issued. This way carriers can process the consignment, which otherwise would be multiple MAWB instead of one. A shipment can have both MAWB and HAWB even if there only is one HAWB issued for the MAWB – this is also known as “back-to-back” and considered a consolidated shipment” (Lufthansa Cargo, 2014)

3.1 Information flow in the transportation chain

Nowadays information flow is as important as physical flow of goods. Customers want real-time-tracking of their shipments and this is a must for contemporary logistics operation. Very often freight forwarders, GHAs and carriers have different IT systems, and those systems have a need to understand each other. With development of IT solutions this issue becomes less and less important, but still some misunderstanding between systems arises from time to time. In order to eliminate misunderstanding as much as possible IATA, in collaboration with member airlines, has developed a Cargo Interchange Message Procedures (CIMP) manual, which describes in details, what is

mandatory, conditional and optional for a various messages (Iata.org, 2016). The most crucial one of the messages are FHL, FWB, FFM, FSU messages. These will be described in details later in chapter 4.3. There are several set-ups recommended by IATA, which could be in place, based on the full carrier presence, or presence through GSA and GHA (Iata.org, 2009). Typical material and informational flow in a case when at both stations airline has own sales office is presented in Figure 7. This is very typical operational set up.

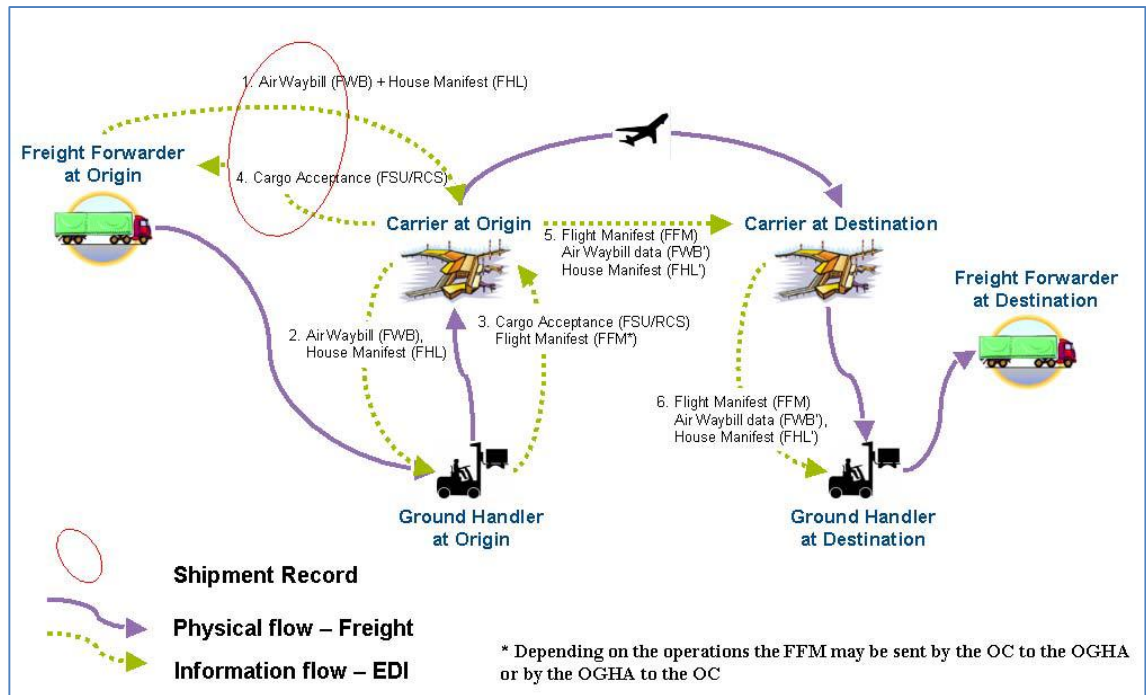


Figure 7. CIMP FSU messages against Material and informational flow (Iata.org, 2014)

Figure 7 shows how transactions in IT systems match informational flow and physical movement of the goods, and when shipment milestones are created accordingly to Cargo 2000 (C2K) standards.

4 Evaluation and monitoring of GHA's performance

4.1 LH-team build-up service unit

Otto Heiska explicitly described the uniqueness of outsourced service unit set-up at LCAG's Helsinki station in his thesis: "Improving quality and operational reliability through organizational change" (2015). Helsinki's LH-Team set-up scheme is presented in Figure 8. This scheme is based on the author's work experience and was verified to be correct by handling and quality manager of LCAG in Helsinki.

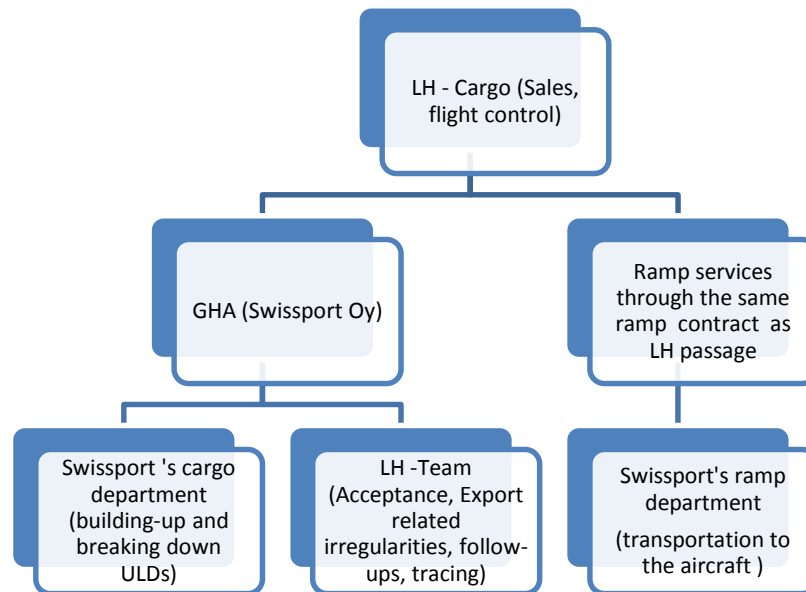


Figure 8. Helsinki station operational set-up

It is a bit confusing to understand when LCAG sales responsibilities are over and LH-team (legally employees of Swissport) starts because they are tightly interconnected. Responsibilities are divided as in Figure 8. Main sales office's activities are to do initial rate negotiation and confirm sales in the IT system. Sales office has the right to set up additional RFS flights or cancel them. At the same time LH-Team might do the same on permission. LH-team responsibilities: In addition to the standard handling agent services such as cargo acceptance, special cargo checks and flight preparations are that LH-team produces load planning and optimization services as well as acts as the primary contact for customers after the cargo has been accepted for transport (Heiska, 2015). Swissport terminal does physical job for building-up units for transportation, literally loads freight on/into ULDs and fixes them with lashing material for safe transportation, or breaks down ULDs and counts goods received. Ramp department

helps cargo to “cross last mile” between terminal and aircraft. Each segment of flight preparation must be done thoroughly and on time, because passenger aircraft turn-around time (for unloading and loading) is less than one hour.

4.2 Legal grounds for evaluation and monitoring of GHA’s performance

Legal grounds for defining relationships between carrier and GHA will be presented in this chapter. Standard Ground Handling Agreement (SGHA) is the main contract which defines relationship between LCAG and Swissport. SGHA’s version and specific charges and service level targets between LCAG and SWP are confidential. In general IATA updates SGHA every 5 years. Latest version is SGHA-2013. Example of SGHA - 2013 can be found at Swissport’s official web site (Swissport.com, 2013). Agreement itself specifies Ground Handling operations in extensive details. Activities breakdown from the agreement’s top level to the particular activities is presented in Figure 9. The Figure 9 is based on the author’s work experience and verified to be correct by LCAG’s handling and quality manager in Helsinki.

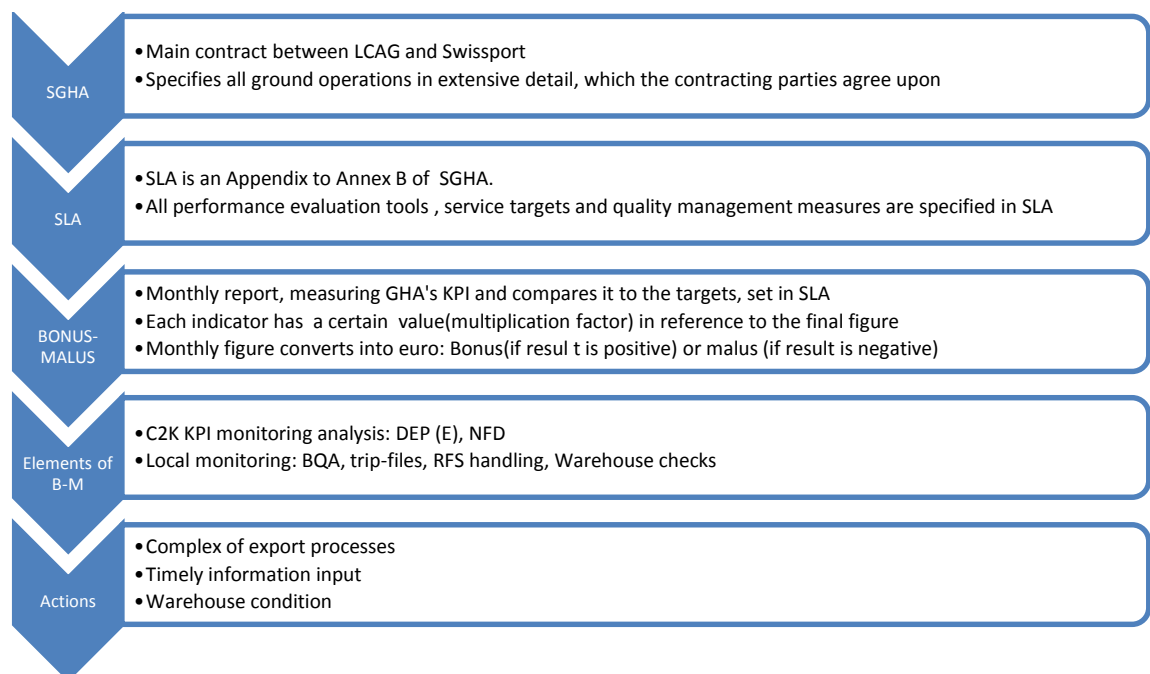


Figure 9. GHA activities monitoring breakdown

SHGA is divided into three parts: main agreement with 12 chapters inside, annex A and annex B. SGHA is designed to be signed by parties as it is, but LCAG includes additional appendix, called service level agreement SLA. SLA is an appendix to annex B of SGHA. SLA specifies in detail all performance evaluation tools, service targets and quality management measures. Based on description of the KPI in the SLA, LCAG designs a report known as Bonus-Malus, which is filled on a monthly basis. Bonus-Malus report's KPIs could be divided into two parts: KPI accordingly to C2K and local monitoring performance KPIs.

Two C2K's KPIs are DEP and NFD. DEP monitors that shipment departed from the first station as planned, and according to the master operating plan. NFD indicator monitors that goods were available at the airport of destination, before the time of the availability (TOA) promised to the customer and consignee has been notified for picking-up the goods. These two statistical KPI's are produced by Lufthansa centrally and might be slightly adjusted on the regional level.

Local monitoring part consists of four main activities; Booking quality assurance (BQA) checks, trip-file checks, RFS handling and warehouse checks. LCAG checks condition of terminal on weekly basis and makes thorough checks whether LH's ULDs and load material are properly stored and damage avoided. Another important part of the warehouse check is to verify import and export goods separation in the terminal, labelling, and storing places. E.g. dangerous goods must be in dangerous goods lockers or specially designated area.

Booking quality assurance (BQA) is a requirement by LCAG to check AWB stated weight and compare it with the actual weight of goods. Goods must be checked if they match one of the following parameters; 1) One of the pieces is bigger than 150 kg (special handling code HEA) 2) One of the pieces is longer than 320 centimetres (special handling code BIG) 3) Whole shipment weight is more than 500kg 4) Whole shipment net volume is more than 3 cubic meters. BQA is a list of shipments which GHA is supposed to check and compare to the list of actual checks done on weekly basis.

RFS handling is monitoring inputs of RFS movement messages into IT-system. This will be described later in chapter 4.3. Due to the system design, movement messages must be created within 60 minutes after actual departure or arrival of RFS. In addition,

the amount of RFS flights departed late is monitored and if late departure happens because of GHA's mistake, this mistake will be recorded into Bonus-Malus.

Trip-file is a result of flight preparation and flight departure. Trip-file is a set of documents, which contains all necessary flight documents. It is agreed that LCAG checks between 100 and 120 trip-files monthly. Trip-file is a set of documents, which means that that it is target is to check, but also to verify that it is GHA does its job correctly and understands processes behind it. Content of trip-file will be described in details in chapter 5.

4.3 Current export flight preparation process

In this chapter current physical goods flow, informational flow and detailed view to activities which happen at GHA premises are described. The map for activities and navigation tool is Airport-to-airport MOP designed by IATA and presented in Figure 10. Figure 10 presents master operating plan in an easy and understandable way, with time line from up to down. In this chapter we will look into processes and transactions behind milestones BKD, FWB, RCS, and DEP.

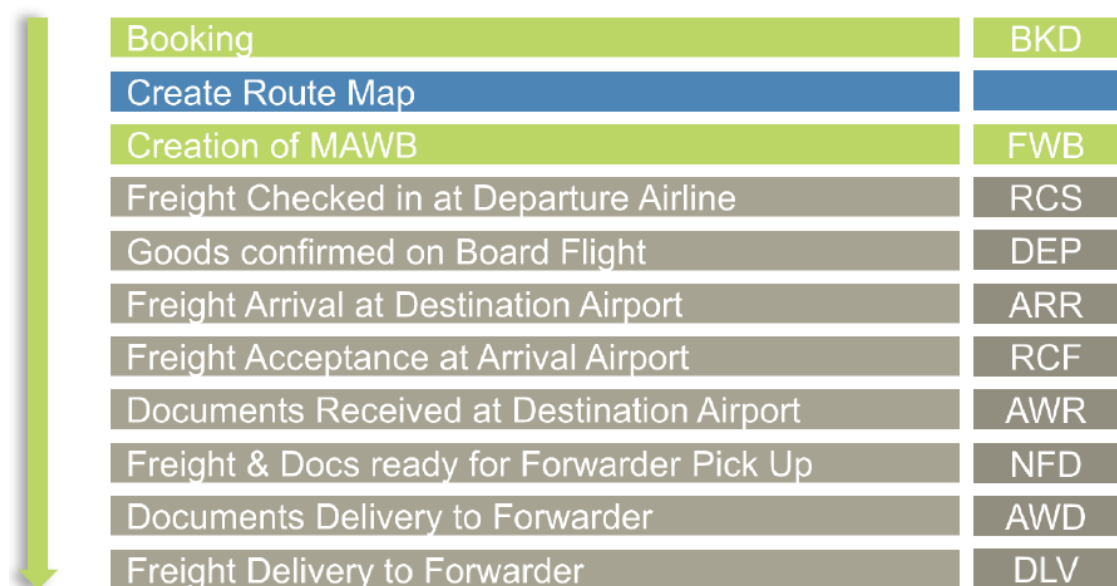


Figure 10. Detailed master operating plan and C2K milestones (Iata.org, 2014)

BKD

All starts with a booking. Booking might be done on-line from Lufthansa-cargo web site or via contacting local sales office. In Helsinki LCAG does not work with “cash-in” customers but with agents (freight-forwarders) only. Crucial information for creation booking is: dimensions, weight, volume, amount of pieces and goods nature. Some goods, due to their nature, are allowed for transportation only on cargo aircraft, some might require special package and some goods might be prohibited at all for transportation on particular route (embargoes). Those are key elements, which must be clarified at this stage. Airline’s sales office (or representative) mentions agent’s AWB number in the booking, but does not issue the AWB. Agent has own stocks of MAWBs and it is entirely their responsibility to create and issue correct AWB and forward it to the airline.

FWB

When booking is done and price is agreed. The agent issues MAWB. MAWB is the contract of carriage between LCAG and an agent and by issuing it, agent “signs” this contract on specific terms specified in the booking. We need to take into consideration that booking and MAWB issuing processes are done in two various systems. That is why later at RCS it is crucial to match shipment with booking and MAWB. When MAWB is issued, FWB message is sent from agent’s system to LCAG’s system in a certain format, described in CIMP. There is a cargo community system between agent and airline, which automatically checks FWB messages to comply with CIMP standards. Next LCAG’s system forwards FWB message to the GHA’s system. FWB message is Master Air Waybill (MAWB) information which is extracted as data and compiled in a special message format that needs to comply with the IATA standards and CIMP regulations (Ccnhub.com.au, 2016). Example of FWB message is presented in Figure 11.


```

FWB
QFSYD
FWB/10
081-55023456SYDLAX/T1K6
FLT/QF005/16
RTG/LAXQF
SHP
/ABC CARGO LOGISTICS PTY LTD
/SUITE 15 9-13 CLUBB CRESCENT
/MIRANDA/NSW
/AU/2228/TE/61295251025
CNE
/XYZ GLOBAL AIRFREIGHT INC
/UNIT 6-9 10 CARGO AGENTS BUILDING
/LOS ANGELES
/US/54321/TE/31011112222
AGT//0234567/8999
/CARGO COMMUNITY NETWORK PTY LTD
/SYDNEY
ACC/GEN/CAN AAHEMXXT2
CVD/AUD/PP/PP/NVD/NCV/XXX
RTD/1/P1/K6/CM/W6/R120/T120
/NG/CONSOLIDATION
/2/NG/TOTAL 1 PACKS
/3/NG/DIMS 42X29X22CM X 1
OTH/P/AWA20
/P/MYC1.8
PPD/WT120
/OA20/OC1.8/CT141.8
CER/CARGO COMMUNITY NETWORK PTY LTD
ISU/15JUN06/SYDNEY/STEVE SMITH
OSI/PLEASE NOTIFY CONSIGNEE IMMEDIATELY UPON ARRIVAL.
REF/SYD01AU/C00001234

```

Figure 11. MAWB in form of FWB message (Ccnhub.com.au, 2016)

We need to understand regardless of the type of AWB; Electronic AWB contract of carriage, or paper AWB contract of carriage is that there is always FWB message. Very rarely customer might deliver goods accompanied only by printed on paper AWB to the terminal (GHA's facilities), and then there would not be a FWB message in the GHA's system. In such a case GHA will check that booking exists and it matches paper AWB and goods are delivered. Next step for GHA is to enter FWB data into their system manually and send FWB message from it to the LCAG system.

RCS

Received from shipper milestone is the moment when responsibility for the goods is passed from shipper to the carrier. RCS accordingly to the C2K standard must be performed before LAT set. In order to take responsibility for right goods airline or GHA on airline's behalf must do two things before RCS: Standard data capture (SDC) and R4C (ready for carriage check). SDC means that all necessary informational messages relative for the shipment are captured in IT systems. R4C means that goods delivered for transportation are properly packed, labelled, accompanied with proper documents and these physical identification criteria do match to information, captured in the systems. These abbreviations and actions behind are described later in this chapter.

Acceptance process starts with freight on hand status (FOH), which means that goods are delivered to the terminal to be examined. This status is not handled by all systems

worldwide and its considered to be optional. Standard data capture process begins when GHA receives MAWB in form of FWB for a shipment (or paper copy) and additionally in case of consolidation all HAWBs are allocated to this consolidation in form of FHLs (could be paper backed as well. FHL is House Air Waybill (HAWB) information which is extracted as data and compiled in a special message format that needs to comply with the IATA standards and regulations (Ccnhub.com.au, 2016). Example of FHL message is presented in Figure 12.

```
FHL
QFSYD
FHL/2
MBI/081-55023456SYDLAX/T1K6
HBS/S00066789/SYDSIN/1/K6/COMMS PARTS
TXT/COMMUNICATION EQUIPMENT
SHP/ALL COMMS PTY LTD
/PO BOX 2738
/TAREN POINT/NSW
/AU/2229/TE/0295251025
CNE/TELE SOLUTIONS INC
/BLOCK 4 SHOP 7 PAVILLION ROAD
/LOS ANGELES
/US//TE/11112222
CVD/AUD/PP/NVD/NCV/XXX
```

Figure 12. House AWB in form of FHL message (Ccnhub.com.au, 2016)

At the moment when all messages are received by GHA, SDC process is “paused” and R4C process takes part. Ready for carriage means that goods delivered by the agent match the booking and the MAWB. Parameters to check are: dimensions, weight, amount of pieces and volume are booked and as described in AWB. Weight and volume characteristics do not exceed tolerance level set by the airline. Goods’ package must be airworthy and properly labelled with MAWB sticker and necessary product specific stickers (e.g. dangerous goods labels, etc.). For consolidation shipments, sum of characteristics (weight and volume) from HAWB must be equal to the final figure on the MAWB. If all conditions are met, then GHA continues SDC process, updates FWB with necessary additional information (usually security screening special handling codes), and sends out to the airline an updated FWB.

One more important thing to check before RCS is “Not OK to forward” (NOK) status. NOK procedure is dedicated to get confirmation from the consignee or forwarder at the destination station that they know about goods coming and they promise to pick them up. NOK is a special handling code which is located in the booking and warns you: “do not ship goods before OK to forward is being received”. If OK to forward is received, then NOK must be removed from the booking’s special handling codes. It is important

to get approval for certain shipments (live animals, dangerous, radioactive goods, etc.) because carrier is responsible for goods during the carriage, and if no one will pick them up at destination point, then carrier(accordingly to internal LCAG's "Cargo handling manual) must do some of the following: 1) return them to the port of origin 2) sell them on the open auction in order to cover terminal handling costs at the port of destination 3) take care of disposition and recycling of goods (important for radioactive shipments for example). This process helps to avoid unnecessary work and costs. Only after all above mentioned GHA will perform RCS. This process guarantees that right goods are available at the cargo terminal at right time, ready for carriage, properly labelled and all necessary information is successfully processed and available in respective systems.

Agents, airlines, and GHAs could send FWB and FHL messages several times before RCS is done. Figure 13 shows information flow between parties involved.

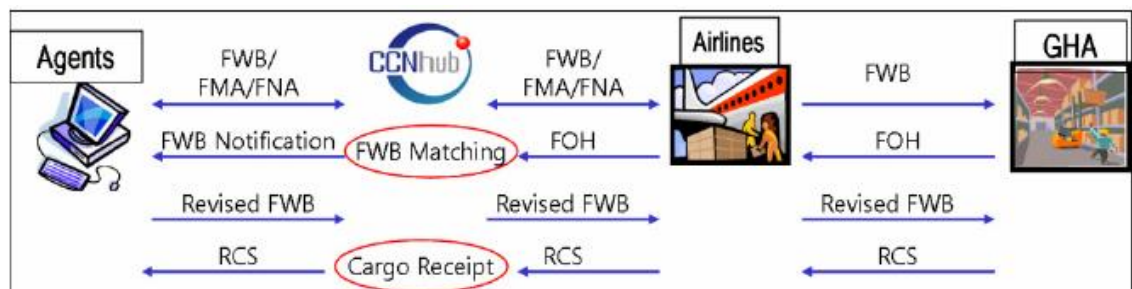


Figure 13. Flow of messages between Agents, Airlines, GHAs (Siacargo.com, 2016)

In order to be sure that message is correct and processed correctly at right time, agents and GHA receive FNA or FMA messages from any of the Cargo community system they use or from Airline's system. Some cargo community systems are called TRAXON CargoHUB, CCNhub.

Information flow presented in Figure 12 must be in harmony and standardized. Cargo community systems are tools for it. TRAXON cargoHUB page has very good illustration (Figure 14) how many parties could be involved in the transportation chain and messaging flow.



Figure 14. Parties involved in goods flow and messaging flow (Champ.aero, 2016)

LCAG is an airline and has iCargo-based system as a mother system for handling and processing data (lbsplc.com, 2016). Swissport (GHA) has Cargospot as a mother system (Swissport.com, 2016) and there are also more systems involved. Fortunately they usually work in harmony. Traxon cargoHUB, or any other CargoHUB system efficiently links members of the global airfreight community, irrespective of their IT configuration or systems. “It enables all parties along the supply chain to achieve high levels of real-time electronic information exchange and to participate in industry initiatives such as e-AWB and e-freight” (Champ.aero, 2016).

There is very useful tool for young professionals, the “Parse2.com”, where Cargo-IMP messages may be syntactically validated (Parse2.com, 2016). This tool allows you to identify quickly where mistake in the message is, but for correction, sender needs to know rules and standards from CIMP manual.

FMA message is a positive acknowledgement or receipt for an FWB or FHL message that has successfully passed the IATA guideline checks and has been forwarded to the required Airline and/or GHA” (Ccnhub.com.au, 2016). Figure 15 gives an example of FMA.

```

FMA
QF
FMA
ACK/FWB SUCCESSFULLY PROCESSED
FWB/9
081-55023456SYDLAX/T1K6

```

Figure 15. Positive acknowledgment message example (Ccnhub.com.au, 2016)

FMA message contains FWB version information, in figure 14 it is 9 at line 5. Readers can see airline prefix (081) and AWB number at line 6, routing from Sydney to Los-Angeles (SYD to LAX) and amount of pieces (T1, total one) and weight of shipment (K6, 6 kilos).

FNA message is an error message which notifies the sender that a problem has been detected in the FWB or FHL message sent. The FWB or FHL message is not forwarded to the Airline and/or GHA. Sender must know that his message has not been sent. In most cases, the FNA can be corrected and the FWB, FHL message re-submitted (Ccnhub.com.au, 2016). Figure 16 gives an example of FNA.

```

FNA
QF
FNA
ACK/AWB REJECTED
/DUPLICATE AWB
FWB/9
081-55023456SYDLAX/T1K6

```

Figure 16. Rejection message example (Ccnhub.com.au, 2016)

FNA message has list of codes, which indicate the transmitting problem. When freight forwarder receives such a message, he must identify the problem and re-submit FHL/FWB message. If the problem is unknown, then forwarder ought to call to the airline or GSA in the region for clarification. This situation the author saw quite often during the internship.

4.3.1 The export process from handling point of view

At this part of the thesis reader will be familiarized with what is going on at the cargo terminal between two C2K milestones, RCS and DEP, and how export shipment

process goes in details, from handling point of view. There are not many literature sources about it. Terminal is a black box for most parties involved in airfreight. Shipment goes inside the terminal, disappears and then appears from another terminal on the other side of the planet.

In Figure 17 the sequences of the event which LH-team must perform in order to optimize and manifest flight are presented. LCAG's flowchart "information flow versus material flow" is describing sequence of events at the terminal.

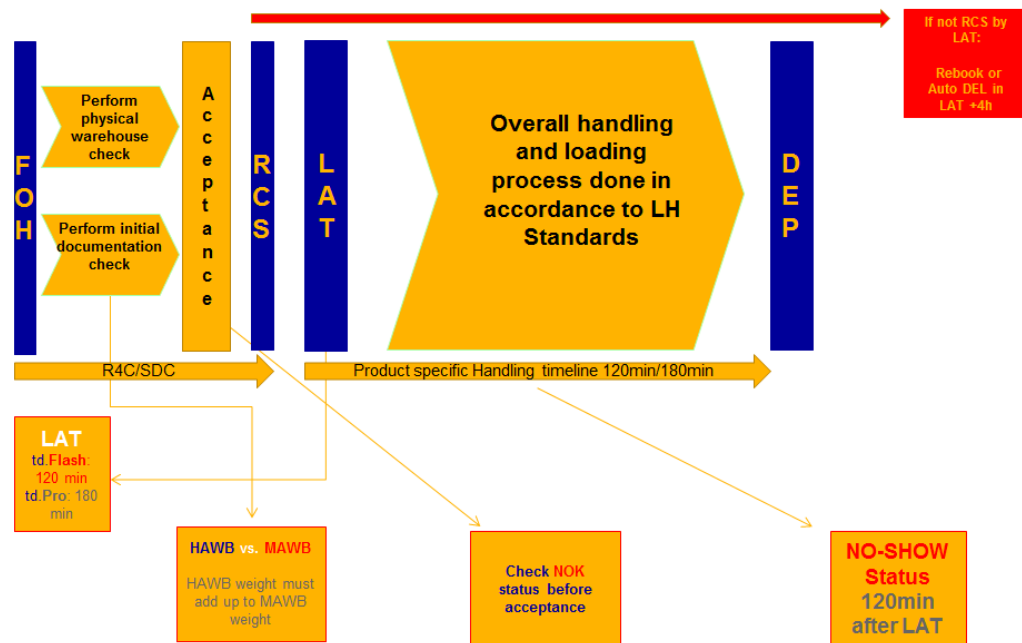


Figure 17. Information flow versus material flow at the terminal (Lufthansa cargo, 2015)

Figure 17 presents in a very clear way what happens at the acceptance, and summarizes all earlier mentioned information about RCS. RCS has to be done shortly before LAT. Research in this thesis will be focused on the big yellow arrow between LAT and DEP in the figure 17. The focus is on the single flight instead of single shipment.

4.3.2 Flight preparation

LH-team starts to work on the flight several days before the actual flight's departure. Usually they monitor next three days' flights and keep in mind current load factor for each flight. Shipment booked for the flight drops to the queue and LH-team confirms this shipment or rejects it based on capacity available before cargo is assigned to the

flight. There are three flight's types out of Helsinki passenger flights, RFS, all-cargo aircraft (freighter). There are certain things to be considered before confirmation of the shipment. For RFS flight, LH-Team needs to check that the capacity is available in the truck's trailer, and to make sure that IATA's dangerous goods segregation rules are obeyed. Since all trucks take ferry to cross Baltic Sea, documentation and labelling of goods must comply with international maritime dangerous goods (IMDG) rules as well. In general, the labelling requirements of IATA are more stringent than ADR, IMDG or RID (Whim and Johnson, 1996). For freighter aircraft, or to be more correct, for position(s) in the freighter aircraft, LH team must check capacity available and mostly IATA's segregation rules. Often many shipments loaded to the freighter are dangerous goods and cargo aircraft only goods (CAO) and therefore they all are mixed on the same flight. Some substances cannot fly together at all, but some of them must be only proper positioned on a certain distance or in different ULDs.

Passenger's flights are the most complicated ones because they are dedicated to the passengers at first and only then for cargo in the belly. This means that passengers and their baggage have the first priority to be on board. The second priority has cargo. The third priority is left for air mail. Since passenger flight planning is the most complicated process, it will be described in more details in following paragraphs.

There are three types of passengers' aircrafts that fly for Lufthansa passage out of Helsinki: airbus A319, A320, A321. Aircraft's types to be flown in and out of Helsinki are planned in the schedule, but could be easily replaced on demand. It means that, if more tickets were sold for the flight than scheduled aircraft's capacity is, then aircraft's type could be easily changed from A319 to A320 and up to A321. In simple words, the bigger number of the aircraft model, is the longer fuselage and more capacity on board it has. Detailed specifications of the aircrafts such as length, range and main deck layout might be found at airbus website (Airbus.com, 2016).

What is more important for this thesis is the cargo capacity on these aircrafts. We need to take into consideration that cargo capacity depends on routing, weather conditions, number of passengers, baggage, mail, catering material, etc. There is an average estimate, which will be adjusted by LH-Team based on personal anticipation of load-factor. A319 aircraft is designed for Lufthansa as loose cargo only, meaning that there is no possibility to load ULDs inside. There are "front hold", "aft hold" and "compartment 5" with total estimated capacity between 1640-2000 kg for cargo on average. This type

of aircraft has also advantage of loading bigger pieces into it, due to bigger cargo compartment doors and lack of ULD limits in comparison to A320, A321. A320 aircraft has 3 cargo positions in front compartment, 4 positions in aft compartment plus relatively small compartment 5 for loose cargo only. Estimated cargo capacity for A320 is 590-1750kg on average. A321 has 5 positions in front hold and 5 positions in aft hold and compartment 5 for loose cargo only. Estimated capacity for A321 is 2830 kg. Average cargo capacity is LCAG's statistical assumption. Its meaning is how many capacities will be left for cargo if there will be average passenger load, which is approximately 74% (Lufthansagroup.com, 2016).

LH-team during the capacity defining process for the flight will take into consideration aircraft model scheduled and check amount of passengers booked and estimated (experience based computer forecast). Usually one passenger means one bag which is on average 18 kilos (with max allowed 23 per piece). One ULD position can fit approximately 30 bags. It means that for A320 (Max 150 passengers +12 crew members) which has 110 passengers booked it can be expected 3.6 ULD loaded with baggage. At this point LH-Team must round up number to bigger or smaller amount, exclusively based on the experience. Let us assume that it is Monday evening and we expect more business travellers to be on board without baggage, then we estimate three ULD to be used for baggage and four positions left for cargo plus bulk load in compartment 5. After that planning process, which takes less than a minute, shipment is accepted or declined for a requested flight in the booking.

Next step in the flight preparation starts approximately 5 hours before departure, when LH-team member puts into the Weight and Balance system the first "estimates" figures. This means what is booked for the flight. These figures could be changed completely later on, at the moment of entering "finals" for the flight. Responsible person enters only amount of Cargo and mail in kilos planned on the flight for the "estimates" entry, without ULD distribution.

Aircraft is exposed to forces in three dimensions and must be well balanced, neither nose nor tail heavy. Otherwise it will lead to manoeuvring difficulties and safety issues. It is a complicated procedure at the first glance, but with modern tools it is not that sophisticated. For example there is an application in iTunes for doing such calculations "Aviation W&B Calculator" but it is used mostly for small private aircrafts (Kronenfeld, 2016). Idea will be the same for big passenger aircrafts, but a bit more complicated. There is very good North –Central-Texas aviation careers web site about W&B with

exercises and detailed explanation (Nctaviationcareers.com, 2016). Relevant for the thesis is that W&B job is not a part of LH-team daily routine. They must input correct figures at later stage of preparation and Lufthansa's remote W&B units situated worldwide will provide correct loading plan.

Shortly after LAT LH-team checks booking list and matches it to the RCS goods. Goods, which are not delivered by LAT are No-show. No-show happens very often, especially because there is no culture of No-show fee in the industry. When it is clear what is supposed to be on the flight and what physically is in the terminal, LH-team prints- out the build-up list, where amount of AWBs with all special handling codes weight, pieces, and dimensions are mentioned. Additionally LH-Team member adds amount and type of ULDs to be used for cargo.

Warehouse flight's preparation work begins with receiving of build-up lists from the office and it can be divided into three parts, as in the "warehouse activities" flow chart presented in the Figure 18.

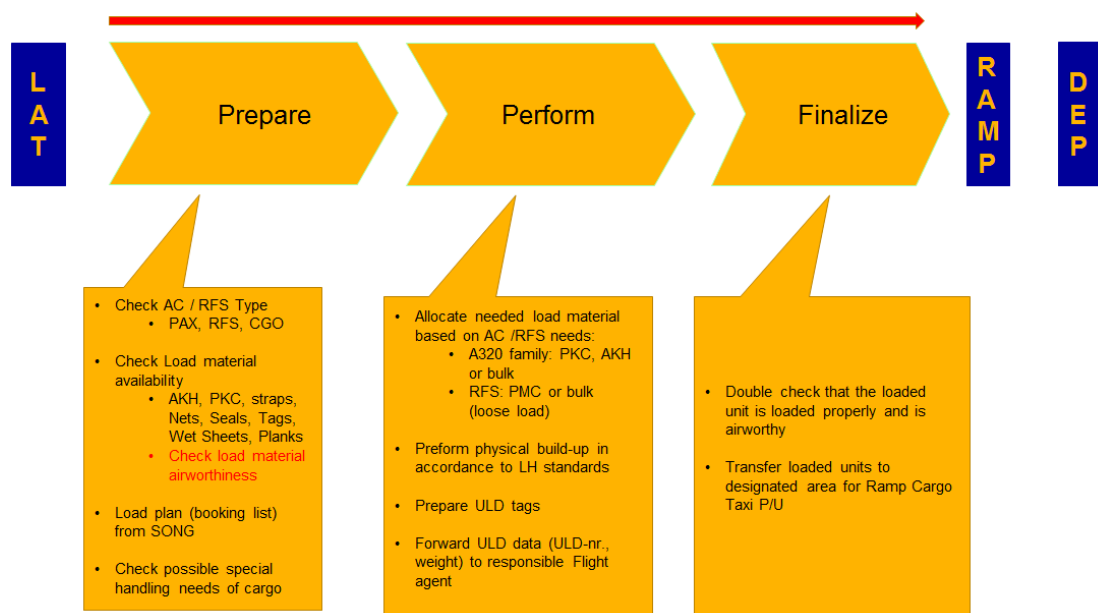


Figure 18. Warehouse activities flow (Lufthansa cargo, 2014)

After getting build-up list from LH-team (ex SONG-team) the preparation phase begins. Warehouse employees check ULD, load and lashing materials available for a flight and make them ready for build-up. At the perform phase actual physical build-up takes place. Freight is exposed to fast acceleration and sometimes emergency brakes during

transportation. In the air, it can be exposed up to 3G forces in up and down directions, and 1,5G in back and forward directions (in comparison to 1G in road transportation). Therefore inside the ULD or on the ULD, freight is tightened with straps and nets and if necessary also wrapped in plastic foil for protecting against rain and snow. ULD is sealed when it is ready. This information (ULD number and gross weight) is then added on the ULD tag, which is placed on the ULD and same information is passed to the responsible flight agent (LH-Team). In real life it means that warehouse worker returns same build-up list to the LH-Team with additional information: which shipment was loaded to which ULD, what is ULD's gross weight and how many ULDs were used. Last step for warehouse is to put loaded ULDs outside of terminal in the designated airfield area for the ramp to pick them up. In simple words leave ready ULDS at the backyard.

Sometimes not all planned items fit to the planned ULDs available for cargo on the particular passenger flight. This information is also marked on the build-up list. When LH-team receives ready build-up list, they enter "finals" data to the Weight and balance system. Lufthansa provides own system for entering W&B data, which is important and will be explained why in this chapter later. System provides a response, a load plan, which will tell ramp which ULD goes to which position in the aircraft. Load plan will be sent directly to the ramp, bypassing LH-Team. LH-team's job is to fit all what they have to the ULD and bulk capacities available for maximizing company's profit.

Task of Lufthansa's weight and balance unit (load control) is to fit all ULDs to the aircraft on right positions. Right balanced aircraft is safe, and also consumes less fuel. At the same time with W&B entries, LH-team adds informational to the Swissport handling system Cargospot. It creates a check-point MAN, which means that goods are manifested for the flight. If W&B unit decides later on to exclude something from loading instruction, then LH-team will exclude same shipment from the manifest before flight finalization and from next system's transaction FFM with discrepancy code OFLD (Off-load). The OFLD message is information for next station, which tells that goods did not depart from origin. FFM is the final transaction in the export informational flow and will be presented later in this chapter

One more important and safety relevant document for flight planning is NOTOC. It refers to Special Load Notification to Captain. The NOTOC is divided into 2 parts: Dangerous Goods and Other Special Load (Valuable, live animals, etc.).

Special Load Notification must be given to the Captains of all aircrafts carrying Dangerous Goods. This document has to provide all relevant information about each Dangerous Goods shipment on particular flight (AWB, quantity, nature of goods, ULD position in the belly or on the main deck, etc). It is entirely up to the pilot in command whether he accepts Dangerous Goods on-board (Dangerousgoodstraining.blogspot.de, 2016). Lufthansa Cargo uses NOTOC only for notifying captain about dangerous goods on board. For other special loads, LCAG has different tools.

When all preparations are done and cargo is ready to be picked-up at the warehouse yard, cargo still might not make its own way to the aircraft belly for various reasons. For example due to the neglect of RAMP, very seldom Cargo is simply forgotten at the yard. Common reason is that factually more passengers with bags arrived than planned; Therefore more ULDs for baggage were used, and fewer positions left for cargo and mail. Sometimes at the last moment it can be discovered that ULDs or compartments are not airworthy. Another case is that due to the weather conditions captain might decide to take more fuel, which affects the mass of the aircraft, balance and load capacity, and therefore some changes in loading might be necessary.

What is important for the thesis from handling point of view is that, If cargo leaves the terminal, then it is included in the FFM and LH-team expects that cargo will be on the flight. If for any reason cargo returns to the terminal, then handling agent makes a discrepancy entry short-shipped in the system (SSPD) which must be balanced by import station with entry missing cargo (MSCA), because shipment was included in the manifest but factually did not arrive to the next airport.

Confirmation messages which clarify, what finally gets on board and to what position are CPM and LDM messages. LDM is load distribution message, presented in Figure 19 and it states general flight figures.

- LDM (Load Message)
 - Completion of the different loads on a specific flight:
 - LH849/20NOV
 - Aircraft registration: DAIS-I
 - Aircraft version: C10M190
 - Flight crew: 3 Cabin crew: 4
 - Destination: FRA
 - Total dead load in compartments 1-5: 4244,1
 - Loads per compartment: 1/735,2 2/660,3
 - Special load and handling codes: PPH, PAS, XCS, ZXO

LDM message

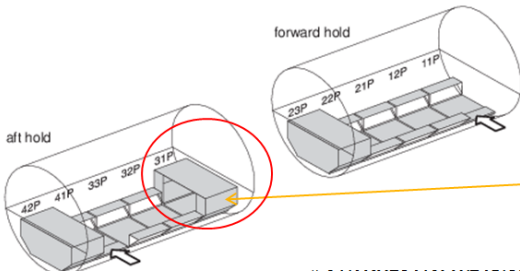
```
ZCZC 10027223
QU HELFKLH
.DPCXBLH 201219 MESX110 NOV14
LDM
LH849/20.DAISI.C10M190.3/4
-FRA.197/0/0.T4244.1/735.2/660.3/1749.4/991.5/109.PAX/9/188
.PPH/12 .PAS/12 .XCS/21 .ZXO/5
SI EST FUEL AT ARR 3547KG
SI FRA B/1762.C/1382.M/420.E/0.
=
```

Figure 19. LDM message and explanation (Lufthansa Cargo, 2015)

This example message in figure 18 shows the weight distribution among the belly for the airbus A321 aircraft. Aircraft enthusiasts could easily find more details about the aircraft by tail number D-AISI. LDM will be the only message for departed aircraft if it carries only loose cargo (in compartment 5), or if it is “loose cargo only” aircraft type. LCAG’s aircrafts with loose load only are: Airbus A319, Embraer 195/190 and Boeing 737-300/500.

CPM message is sent if ULD positions are used for cargo or mail in the aircraft. In Figure 20 there is a scheme of the same D-AISI A321 aircraft with detailed ULD distribution and CPM message and information description is presented.

- CPM (Cargo Position Message)
 - Completion of the load divided into aft and forward hold positions:
 - A321: 10 positions + bulk (42P, 41P, 33P, 32P, 31P, 23P, 22P, 21P, 12P, 11P+52)



CPM message

```
ZCZC 10027224
QU HELFKLH
.DPCXBLH 201219 MESX110 NOV14
CPM
LH849/20.DAISI
-11 /AKH15384LH/505/M
-12 /AKH39081LH/230/C.PPH.PAS
-21 /AKH70734LH/490/C.XCS
-22 /AKH71447LH/85/X
-23 /AKH39566LH/85/X
-31 /AKH72419LH/745/C
-32 /AKH39385LH/529/B
-33 /AKH39330LH/475/TB
-41 /AKH10058LH/502/TF
-42 /AKH71091LH/489/TB
-52/40/TF-52/2/B.ZXO-52/13/B-52/27/FB-52/27/TB
SI EST FUEL AT ARR 3547KG
=
```

- “-31/AKH72419LH/745/C”
 - AKH72419LH loaded with gross weight of 745KG(incl. ULD weight) loaded into position 31P

Figure 20. CPM message example (Lufthansa cargo, 2015)

From the CPM message in Figure 18 it is possible to read for example that 505 kilos (incl. ULD weight approx. 85 kilos) of mail loaded in the AKH to the position 11, 745 (incl. ULD) kilos of cargo are loaded in the AKH ULD type to the position 31. Additionally there is information about baggage and cargo, loaded as bulk to the compartment 5 (entry starts with 52). CPM gives a clear picture that ULDs went on board and in case something would be missing, CPM's information is vital for investigation and operational recovery. Those messages act as a proof of what was exactly loaded on board. CPM and LDM come to the Swissport system from the ramp right after actual departure of the aircraft.

Aircraft departure happens in three phases; Off-blocks, taxiing, and a Take-off. Off-block literally means that wheel blocking triangles are removed and aircraft is free to go. This is the moment when responsibility for cargo is passed to the captain of the aircraft. Next phase is taxiing. Since jet aircrafts have no rear gear, they need to get a push-back by special equipment. When push-back is done, aircraft will taxi itself to the runway. De-icing or anti-icing procedures could be performed during taxiing time. Last phase of the physical aircraft departure is taking-off, simply when aircraft becomes airborne. This explains why a MVT message looks as it is at Figure 21.

```
QU HELFKLH
.FRA8DLH 140525 MESX028 MAR15
MVT
LH855/14.DAIDV.HEL
AD140505/140525 EA0746 FRA
PX166
```

Figure 21. Movement message example (Lufthansa Cargo, 2015)

Message could be decoded as follows. The first line points to the recipient (SITA address). SITA is a message interchanging system. It is originally joint venture of 11 air companies and was developed in the 80s. Its addresses and standards now are backbone of information transmitting in air freight (Sita.aero, 2016). Second line contains sender address, date and time in UTC format. It is followed by the month and the year when entry was done in the system. The third line identifies the type of the message - movement (MVT). Line 4 contains information about the Airline (LH), flight number, aircraft tail register number and airport of origin Helsinki (HEL). Fifth line contains information about MVT process, described above and could be read as follows: actual departure (AD) on day 14 at 0505(UTC) off-blocks/ day 14 at 0525(UTC)

take-off, Estimated arrival (EA) 0746 (UTC) in Frankfurt. Last line shows the amount of passengers on board. For the passenger aircraft it is not LH-team's job to create a movement, it comes from the ramp, but for the freighter and RFS flight, LH-team does MVT transactions into the LCAG's system.

Exact decoding of the abbreviation FFM accordingly to the CIMP is Airline flight manifest message. FFM is the last transaction done by GHA in outbound process at the export station. Combination of actual departure movement and FFM, sent on time will generate C2K milestone DEP. An example of FFM is shown in Figure 22, and it is the pre-alert to next station, and provides details of consignments loaded to the particular flight (Iata.org, 2015).

```
QK HELFKLH
.HELCS8X LH/200343 MESX086 SEP14
FFM/8
1/LH2467/20SEP0635/HEL/DAIPC
MUC
ULD/AKH71786LH
020-72205954HELMIA/T3K308MC0.93/CONSOLIDATION A/HEA/EAP/ECC/SPX/MIALH COR/X
OCI/FI/EXP/M/14FI000001545613E1
/FI/ISS/RA/00102-01
///SM/XRY
```

Figure 22. FFM message example (Lufthansa Cargo, 2014)

In the example of FFM message, key elements are highlighted with different colours for easy reading. The first line identifies recipient of the message, SITA address. The second line contains sender address, Lufthansa's prefix (LH), date and time in UTC format and when the message was sent. The third line contains message version specification. the fourth line has LH prefix, identifying that it is the Lufthansa flight and flight number, date and local time of event, airport of origin, aircraft tail number. Airport of the destination is on the fifth line. Line six tells us which ULD is loaded/ Type of ULD (AKH), ULD number (5 letters) and LH identification, meaning the owner of ULD. Line 7 contains AWB number, routing information Helsinki to Miami, T3 stays for total amount of pieces (one of them is more than 150 kg therefore special handling code HEA is used afterwards), K308 is amount of kilos, MC 0.93 means that net volume of the shipment is 0.93 cubic meters. Rest of the lines of the message tell special handling information, customs' movement reference number, and the method of security screening x-ray.

It is also appropriate to explain UCM message. UCM message is a ULD Control Message. It tells which ULD was loaded on which flight and when it left a certain airport. It helps to monitor ULD movements. Those messages are crucial for ULD stock steering. For example based on those messages Jettainer or CHEP (another ULD steering company) knows which ULD is where. Also based on those messages they know the duration of ULD lease, therefore those messages support accounting. In Helsinki GHA is responsible for sending those messages on time and in right format. Example of UCM message is presented in Figure 23.

```
QK HELFKLH
.HELC8X LH/100416 MESX086 JAN15
UCM
LH2467/10.HEL
OUT
.AKH39410LH
```

Figure 23. UCM message example (Lufthansa Cargo, 2015, modified)

The first three lines are familiar to the reader already. It tells about recipient, sender's address, day, time and the month of the year when it was send. UCM identifies type of the message in the line three. Line four points to the Lufthansa's flight, day, and airport of departure Helsinki (HEL). The fifth line identifies type of the movement - OUT. Line six points to ULD, its specification and number "AKH39410LH" is OUT (line 5) of Helsinki.

Figure 24 will help the reader to wrap up all above-mentioned transactions and match them against C2K monitoring milestones on the time line.

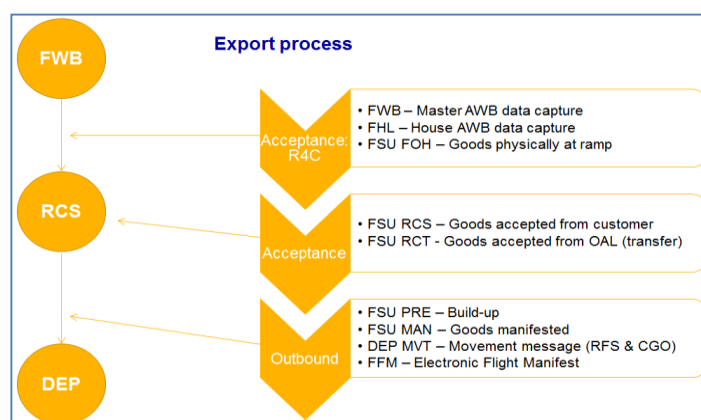


Figure 24. C2K milestone against system transactions (Lufthansa Cargo, 2015)

As we can see from the figure 24, there are many transactional steps behind C2K milestones. There are even more processes behind system transactions. The author of the thesis hopes that GHA's activities presented in this chapter will change the perception of the cargo terminal from a "black box" to complex but understandable mechanism.

5 Improvement of documentation flow and quality in air freight

5.1 Action based research

The action based research was performed accordingly to the methodology, described in chapter 1.2. Research steps are presented in Figure 25

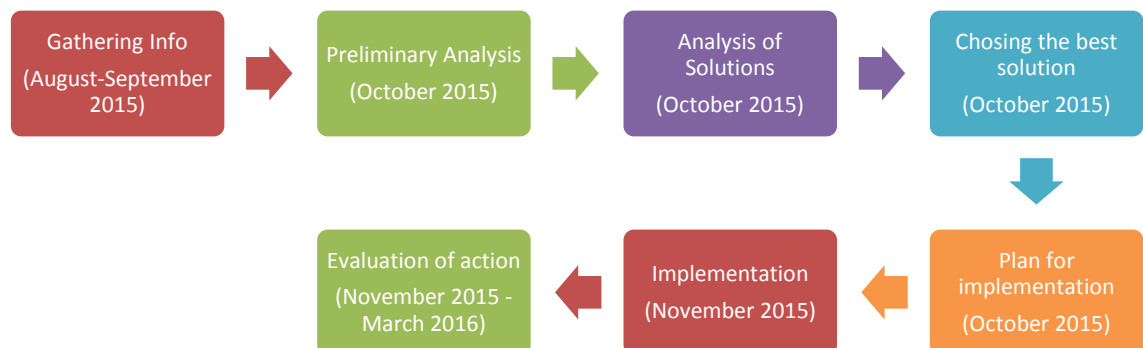


Figure 25. Action-based-research plan

Understanding the context and gathering information for this project meant an understanding of airfreight basics and outbound procedures, which are described in chapters 2 to chapter 4, plus studying legal requirements in the internal documents such as Cargo handling manual (CHM) and Ground Handling Procedures (GHP). CHM and GHP are internal confidential documents which explicitly describe each step of air cargo processes, from carrier's point of view. LCAG as the German carrier must

comply with EU laws, German laws (on which CHM and GHP are based) and comply with local laws, if they are more strict than German laws. It was vital to understand operational processes and how they are interconnected between each other because only deep understanding could help to identify processes “bottlenecks”.

As it was mentioned earlier, trip-file is a set of documents, which exists for every outbound flight with cargo on board. Most of the processes, documents or transactions were presented in previous chapters. For the need of the project, trip-file’s content was segregated in Table 1 on the following basis; mandatory as hard copy (HC) by law and process wise mandatory, but made in the system as transaction (E). Before more details to each document are given, it has to be taken into consideration that all documents at the starting point of the project were printed out and that was the way for transmitting and storing data before the process change.

5.1.1 Current trip-file content and processes.

Trip-file’s content is combined from three different modules; 1) “General” 2) “Flight type (PAX, RFS or Freighter)” 3) “Product specials” (if applicable). Trip-file’s structure is presented in Figure 26.

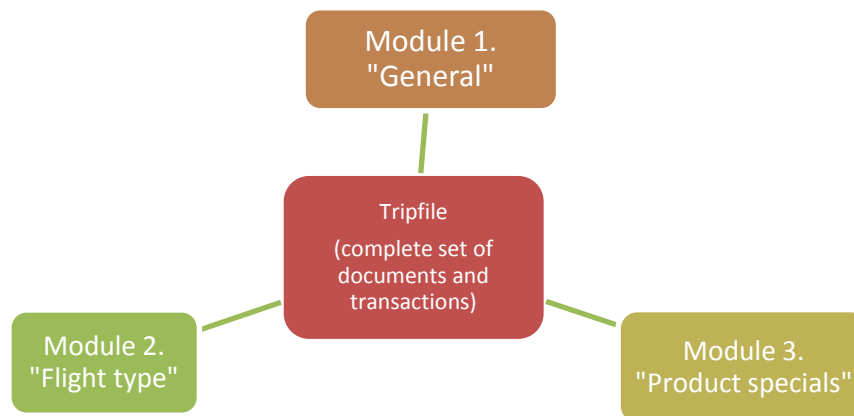


Figure 26. Trip-file’s structure

The first “General” module, is a basic “must have” for every flight regardless the type of the flight. Second module is flight type relevant: passenger flight, Freighter flight or

RFS. It means that based on the flight type out of Helsinki you need to pick one of the flight's specific module. The last module is optional, product-specific relevant. If there is a specific product on board, then product related documents must be in trip-file. Most of documents and electronic transactions from module 1 and 2 were discussed earlier in details. Documents and transactions from module 3 will be presented later in this chapter and topic about customs documents will be discussed in separate chapter, because it is comprehensive. Documents' distribution by modules and documents' purposes are presented in Table 1.

Table 1. Trip-file's breakdown

Module Number	Group	Document name	Source	Purpose
1	General	Trip-file check-list	HC	Check-list is designed as a tool, which helps employees not to forget a single step in export flight preparation. document is signed by responsible person, this signature certifies that all necessary export processes were done correct and on time
		AWBs	HC/ E	Main contract of carriage could be paper based or electronic. Every trip-file must contain all AWB copies attached, and be mentioned in the cargo manifest
		Build-up list	HC	Paper based document, was discussed previously
		FFM	E	Airline flight manifest message, was discussed previously
		Pallet weight statement(LH format)	HC	Document which states pallet weight with goods and loading material (nets, straps) on the top. LH format document has less information, than the same document, made in Cargospot
3	Product specific	Safe/td pre-advise	E	Electronic message, will be discussed later
		VAL acceptance check sheet	HC	paper based document, will be discussed later
		Live/td pre-advise	E	Electronic message, will be discussed later
		AVI acceptance check sheet	HC	paper based document, will be discussed later

		DGR pre-advise for class 1.4S goods and radioactive	E	Electronic message, will be discussed later
		DGR acceptance check sheet	HC	paper based document, will be discussed later
2	Freighter specials	LDM and MVT ex DHL	E	LCAG does not have regular scheduled all-cargo aircraft operations out of Helsinki. For its own need, LCAG has certain capacity bought from external supplier's freighter, which departs from Helsinki every evening five times per week on workdays. Capacity provider's system and LCAG systems are not in harmony, further more provider's logic does not match IATA's logics fully and therefore some mismatches occur. Swissport needs to interpret MVT messages from capacity provider and type it in right format into LH system (DASGO). LCAG needed original MVT message to be sure that Swissport did their job correctly and LDM acted as a proof that cargo was physically loaded into the aircraft.
		MVT ex Dasgo, printout	E	DASGO (LH-system) print-out in trip-files was needed as a proof that MVT was done in LH system
		Pallet weight statement (Cargospot version)	E	Swissport scales a pallet ready for carriage and send this information to the freighter capacity provider. This document has pallet identification, goods weight per AWB, tare weight, and actual pallet total weight (including load materials). This measuring data is vital for aircraft weight and balance
		NOTOC (done in Cargospot)	E	NOTOC is Special Load Notification to Captain
		UCM	E	Unit control message. It was discussed previously
2	Passenger Specials	LDM, CPM messages	E	Load distribution message and cargo position message. They were discussed previously
		WAB printout (LH system)	E	W&B data input, used for process control
		NOTOC (done in LH system)	E	NOTOC is Special Load Notification to Captain

2	RFS specials	RFS cover sheet	HC	The form is used to inform the truck driver about the loaded shipments and provides customs information about the shipments. Truck cover sheet is mandatory by law as a hard-copy document
		UCM	E	Unit control message, serves to control ULD physical movements worldwide. Empty capacities on trucks are used often for returning damaged ULD and surplus ULDs, nets, straps to the Hub station. Empty surplus or damaged ULDs movements will be recorded only in UCM message, nowhere else. That is why for the trucks those messages are extremely important
		MVT ex Dasgo, printout	E	DASGO (LH-system) print-out in trip-files was needed as a proof that MVT was done in LH system
		Customs documents	HC/ E	Will be discussed in a separate chapter in this thesis later

Module 3. Product specific documents / transactions

Pre-advises

Pre –advise as such is an electronic message to next station, notifying that special freight is coming. Special products are usually fast delivery terms shipments or products which require special care and goods flow control.

Pre-advise for Safe/td

Safe/td is the LCAG product for high valuable shipments: diamond, banknotes, live human organs or pieces of art (Lufthansa-cargo.com, 2016)

Pre-advise for Live/td

Live/td is the LCAG product for transporting live species: big zoo animals, race horses, domestic pets, fishes and spiders (Lufthansa-cargo.com, 2016).

Pre-advise for Care/td (DGR)

Care/td is the LCAG product for carrying dangerous goods such as: flammable raw materials or oxygen tanks (Lufthansa-cargo.com, 2016). “Dangerous goods’ are materials or items with hazardous properties which, if not properly controlled present a

potential hazard to human health and safety, infrastructure and/or their means of transport. Accordingly to ICAO dangerous goods are divided to 9 classes” (Uk.dsv.com, 2016). Currently pre-advises are needed for a division 1.4S – minimal hazards explosives, because items belonged to this class(1.4S) are usually cartridges and weapon ammunition – subject for control and monitoring under German SprengG (Sprengstoffgesetz) law. One more must pre-advise is for class 7 radioactive goods. Class 7 notification is an extra caution measure. Danger from radioactive goods will not be visible visually to rescue team in case of accident, for example.

Product specific check-sheet

Mandatory hard copy document, which states condition and detailed description of freight accepted. Check sheet is list of simple unambiguous questions. By answering for each question, specially trained and educated employee ticks one of three “YES/Not applicable/ NO” boxes. Answering to all questions will give comprehensive picture about freight conditions. If answer to one of the question is “NO” then goods will be rejected for carriage. Employee puts own signature and initials in the end of the sheet. Example of check-list (not LCAG’s one) can be find in the appendix 1.

5.1.2 Customs documents

This part of trip-file is discussed in separate chapter of the thesis, because it is relatively big and complex. Based on truck cover sheet or AWB it is possible to identify goods status. There are three possible customs statuses for goods (ec.europa.eu, 2016):

C - EU-goods not leaving the EU (internal trade, example Helsinki - Barcelona)

X – EU-goods leaving the EU - export goods (example Helsinki – Frankfurt - Chicago)

T1 (+TD, TF) – Goods from third countries into the EU (under Customs control, must be customs cleared later or leave the EU, example St.Petersurg (Russia) - Helsinki – Frankfurt - Atlanta). It used to be a very important document of trip-file, because no shipment should leave without proper documentation. Nowadays, when everything become electronically, it is not likely that shipment will depart without proper documentation.

T1 customs status shipments

If in the trip-file there is a transit status shipment (T1), then in documents there is usually (but not necessarily) a customs document, transit declaration (T1), which

covers part of the route from shipper's warehouse to the Swissport terminal. T1 contains customs MRN number (movement reference number). "The MRN is a unique number that is automatically allocated by the customs office that receives/validates and accepts the electronic customs declaration or EXS (ec.europa.eu, 2010). Swissport requests from the customs new transit declaration (T1) for the next segment of the route, based on previous MRN. The transit declaration (T1), which covers LCAG's segments, is relevant for trip-file checking.

X status shipments

According to European commission's Article 161(5) CC "the export declaration must be lodged either at the customs office responsible for supervising the place where the exporter is established or where the goods are packed or loaded for export shipment"

When agents hand over the goods to the carrier, they must be ready for carriage and accompanied with proper documents. For "X" status shipment one of the document is an export declaration. If we take the same routing example as above Helsinki-Frankfurt-Chicago, then customs in Helsinki will be customs office of export. Customs office of export performs numerous activities, some of which according to the guidelines are;

" the verification of the declaration, supporting documents, and the examination of the goods, taking measures allowing the identification of the goods, controls on whether the goods are subject to prohibitions or restrictions, the release of goods for moving to the customs office of exit, the confirmation of exit to the exporter/declarant, the issuing of the MRN to the declarant, forwarding the "Anticipated Export Record" message to the customs office of exit" (ec.europa.eu, 2010).

Frankfurt will be the last station before goods leave the EU; Therefore Frankfurt in these terms is customs office of exit. The customs office of exit checks, on the basis of a risk analysis, whether goods are missing, are in excess, and/or do not correspond to those declared or have been substituted (Ec.europa.eu, 2010). Basically customs office of exit matches goods with document made by customs office of export and gives a green light for export of goods.

"X" status goods export cases by air are described in details in document "export scenarios" (scenario 17) by European commission. (ec.europa.eu, 2010)

C customs status shipments

C status goods are intra-EU shipments and customs is not concerned, no customs documents are needed.

Even though origin of customs requests and documents electronically, process flow is designed so that first those documents appear at Swissport terminal as hard-copy.

5.2 Observations. Project progress and outcome

Work observation, trip-file's analysis and employees' questioning showed a bottleneck of a current set-up. Mandatory hard-copy based documents must be filed as they are, but electronically available transactions are printed out without a reason. It takes valuable time of Swissport employees and resources such as time, electricity, paper and toner. Changing the way of transmitting data would solve this issue. Next step of the process was brainstorming and creating first solution and alternatives, which could improve transition of information as well information's quality. For this task "concept mapping" method was used by the author of this thesis. This project's artefact was done in October 2015 can be found in the Appendix 2.

After studying legal ground by the author of the thesis It became clear that hard copy mandatory documents cannot be avoided or amount decreased. At the same time, way of transmitting e-transactions had to be changed. The next question to be answered was "how to make it?". First idea was to follow modern trend and implement document circulating which is fully electronical. For that reason some additional software is usually required. There are all types of software designed for this purpose and the most of the share is based on Microsoft SharePoint 2013. It was impossible to convince two independent global companies to invest locally for joint interchange of documents. Because of that another solution was formed as follows.

Solution 1. "All into PDF"

All hard copy documents must be stored as they are but at the same time scanned to PDF. All electronically available transactions must be saved in PDF and concatenated with first PDF. Final document must have certain name for easy identifying the outbound flight and sequence of documents inside. Documents will be stored at Swissport server and transferred to the LH server via encrypted memory stick. Program suggested for encrypting was open source "TrueCrypt" (Economist.com, 2014). For LCAG it would be a simple solution in terms of easy access to the files, which are sometimes urgently needed (e g for certain MRN number).

Disadvantages of this solution are that it does not lead to the document quality improvement but improves only the way of transmitting information. For Swissport it will bring almost no advantages, because filing mistakes (print-outs forgotten) will be still possible. However, easy searching will be possible later. One of the most important things is that no extra time would be released for LH-team. Also feedback from SWP employees was that they would rather print than scan because it is faster. This all led to designing other alternative solutions.

Solution 2. "PDF + Hard copy"

What is necessary stays as a hard copy. All necessary transactions instead of printing are stored in PDF. For LCAG this solution has same effect as the first one. For Swissport effect is also considered to be the same. For employees this option could be better than printing-out but time test is relevant to be performed in order to justify process change time wise for example in seconds. This option still does not improve quality of documentation.

Solution 3. "Hard copy + limited Cargospot access"

Hard copy documents stay as they are. For access to electronic transaction, SWP grants to LCAG restricted access to their IT system Cargospot. Restrictions are following: it is possible to see only export transactions (no import) and browse only through LCAG's AWB and LH flights. At the same time was agreed to exclude LCAG's document pallet weight statement (PWS) with Swissport's one, because it has more data in it. It was suggested also to stop printing WAB and NOTOC for LH passenger flights because they are done in LH systems and in extreme case it is possible to recall them.

Previously printed-out MVT messages from LH systems were suggested not to be printed at all and let the intern to control them. This led to document quality improvement as follows: 1) focusing on the quality (timeliness) of movement message (MVT) instead of focusing on simply existence of it 2) Helps to avoid archiving mistakes (print-out forgotten). FFM, CPM, LDM and UCM messages became available for check in Cargospot this led to absence of archiving mistakes as well. Outcome for LCAG was easy access for documentation, from two sources. Benefit for intern is to get to know one more cargo handling system. For Swissport there is a financial benefit since no penalties for archiving mistakes are possible. It is possible because transactions are not printed and filed any more, but existence in systems is checked. Very seldom happens that transaction was not made, and then it is instead a genuine process

mistake and subject for penalty. Most positive outcome from this solution is for LH-Team. They do not need to do double work and get more free time for more important things, which will lead to the customer service improvement.

The project's solutions were evaluated with the decision mantra equation, voiced by Mr. William Simcoe in the "Contextual decision making course" $ED = QD \cdot 0.2 + AD \cdot 0.8$ (Simcoe, 2016). Effectiveness of decision equals quality of decision multiplied to 0.2 (20%) plus acceptance of decision multiplied to 0.8 (80%). This means that in order to implement new process successfully a proactive employees' questioning was completed. LH-team (4 persons) gave their feedback on how it could be implemented in daily routine. Three main requirements must match decision outcome. Primarily solution should comply with Lufthansa internal legal documents and external authority's regulations. Secondly LCAG and SCS demands for new process must be fulfilled. Thirdly decision mantra equation must be considered, and employees' demands fulfilled.

Information, facts and comments from operational side were gathered before introduction of three concepts to the management. It was clear that at that current moment a chance for implementing had solution number three only and the author of the thesis had to admit the best one out of all three. Presentation took place in the end of October/beginning of November 2015. SWP's employees voted for third option and SWP's and LCAG's management were favourable to this option as well. Three phases of implementation of this solution were designed immediately at the meeting:

Phase 1: To grant LCAG access to Cargospot and stop creating print-outs.

Phase 2: To update trip-file checklist and make it more coherent with SWP's workflow.

Phase 3: In the future, replace hard copy documents with electronic documentation flow system and check-sheets with tablet computers.

Phase one was implemented immediately in the beginning of November 2015 and was proven to be successful from the first day.

At the moment of finishing this thesis phase two was still in progress, and phase 3 is expected to be performed not earlier than at the year 2017.

6 Result and data analysis

For data analysing was used a knowledge gained during internship. It is important to distinguish process failure from archiving failure (famous print-outs that were not attached to trip-file). Figure 27 shows amount of total trip-file checks made and failures discovered during year 2015.

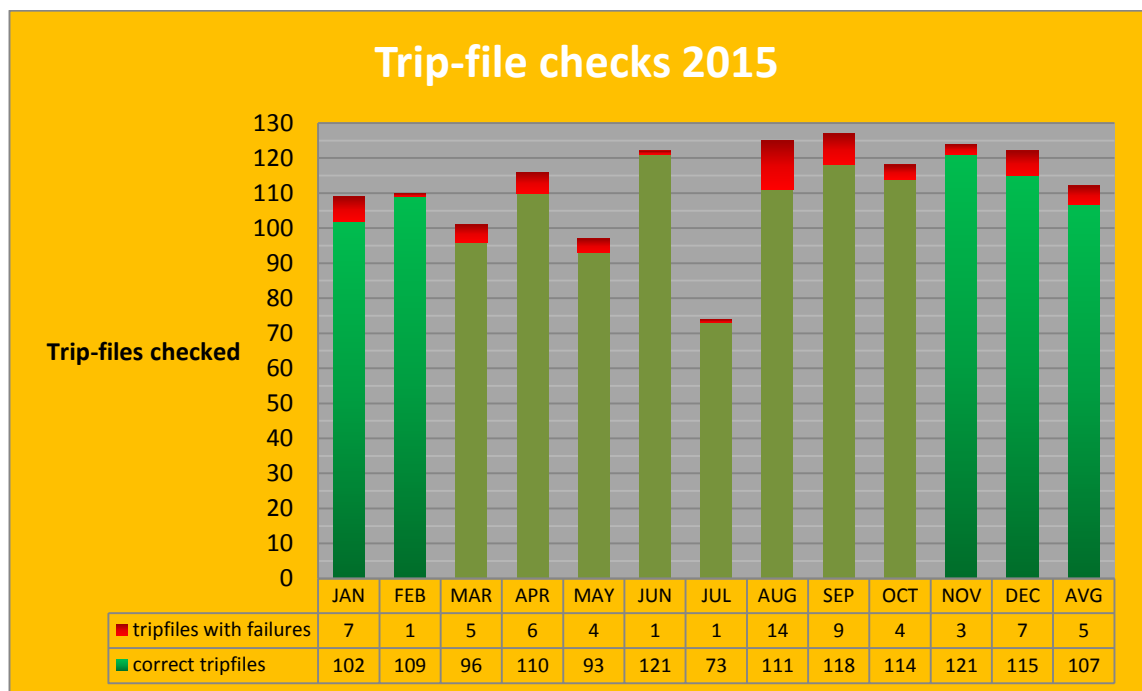


Figure 27. Trip-files check data during year 2015 (Lufthansa cargo, 2015)

Research of old process was performed for a period from March 2015 till October 2015 included. There were made 44 mistakes in trip-files, during that period. Among them 26 mistakes were filing mistakes (FFM or MVT not attached, etc.) and 18 process mistakes. It means that 59% of mistakes, which happened from March 2015 till October 2015, could be avoided simply by using new process set-up. Numbers are displayed in Figure 28.

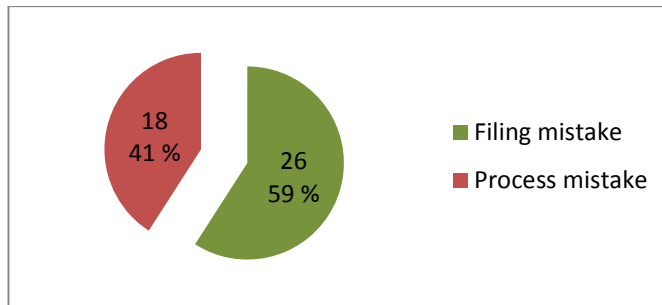


Figure 28. Trip-file's March to October 2015 mistakes' nature

The idea of avoiding possible mistakes was confirmed to be genuine by LCAG handling and quality manager, Swissport managers and LH-team staff. Every mistake affects SLA's monthly Bonus-Malus chart by certain amount, which is confident. We can only identify significance of this process development, by saying that some thousands of euros could be saved for Swissport.

After the project implementation data did not look splendid from the beginning. It was so because focus was changed from the existence of the data to the quality of the data. Through this project implementation LCAG identified unknown weak spots, and unpleasant knowledge loopholes in the process understanding, which were fixed in November and December 2015. At the end this "fixing" improved quality of the understanding the processes and data quality itself. November 2015 and December 2015 average amount of mistakes was 5, which was matching 2015 year's average. One more thing which affected data in November December was due to the specificity of SLA agreement, since mistakes found in the process understanding were possible to record only through trip-files check. It means that if specific process failure was discovered then it was possible to make as a "subject for penalty" only through trip-file check failure.

During January, February and March 2016 same pattern for mistakes' amount was discovered. Amount of mistakes in January – 3, February – 2, March - 2. Only one process mistake was spotted during trip-files checks. Not a single archiving mistake was spotted in the trip-files itself since November 2015, when the project's solutions were implemented. However, data capture mistakes and acceptance mistakes were recorded into Bonus-Malus file through trip-files checks. This observation shows that there is no need in trip-files check with new processes in place, or amount of checks

could be decreased from over 100 trip-files to 30-50 checks. Simultaneously process non-compliances have to have certain fixed penalty amount in Bonus-Malus.

Current situation with SLA's logics completely ruins credibility of general figures of trip-file checks. At the same time it is signalling that current Bonus-Malus process in place is not up-to date and there is a need to re-design it. Both companies' management have noticed the same issue, and negotiations about new evaluation system will take place together with new SGHA contract in the near future.

Survey's answers show that LCAG's management is satisfied with overall project outcome (4/5). Documentation quality and data transmitting improvements were rated high (approximately 76%), and therefore significant change was admitted. Project preliminary processes were ranked rather efficient, encouraging and joyful then distressing and downwards. Project outcomes implementations were ranked rather fast, easy and welcoming then slow bureaucratic and antagonistic. Among suggested improvements "most wanted" option was: e-documentation circulation system.

During the interview, of LCAG manager he confessed, that the results of the project are significant but ranked in the answers somewhere at the level 70-80% only, due to the personal scaling level. Exact quote is: "You will never get from me 100%, 80 percent is already a good result".

Swissport management is satisfied with the solution implemented and overall project outcomes (4/5). Data transmitting improvement was rated at the level of 25%. Document quality improvement was rated at 46%. This marking was clarified later in the interview. Interesting that management expressed their feeling towards new routine even though they did not usually prepare trip-files by themselves. Their attitude is along with the employees; less time being spent, routine becomes better, and it is much more difficult to make a mistake. Swissport's management assess preliminary project's process almost neutral, but with small tendency to the positive statements. Process outcomes of implementation are ranked as rather slow and bureaucratic. This was also clarified in the interview later. Among improvements were strongly emphasised a need for e-documentation flow system and tablet devices implementation for warehouse employees. Driver's room and 3D gate(automate weight and volume checking tool) was ranked as least priority.

In the interview, after filling the questionnaire, one of Swissport's managers clarified few rankings. Project indeed had positive impact, but on data transmitting level, in Swissport's perception, is still not significant improvement between the two companies.

That is why rating is at 27% only. Document quality is ranked high at fair level (46%). What reader needs to consider is that every marking is above the zero. When difference before and after the project is more than 10%, then project is considered successful, as In this case.

Project implementation was rated slow, because this trip-files' issue had been "in the air" between the two companies for several years. It was finally implemented, but overall project implementation took too much time. In the future developments were highlighted e-documentation flow and tablets for warehouse. Both solutions would improve data transmitting and data quality internally at the GHA premises. Using tablets would also give the opportunity for warehouse to use software help-tools which are not currently available for them. 3D gate option was explained as least significant option because initial investments are high, but nothing among currently available products on the market has interface to the GHA's IT systems. In other words, company buys very expensive scales, which indeed do weight and volume measure checks accurate and fast, but outcome is text data only in various formats. In order to use this data company steel need a person to create an input in the system. Current operational scope does not require this tool.

Swissport employees

Swissport employees are satisfied with overall project outcome on average (4,3 /5). Documentation quality and data transmitting improvements were rated high (70%), but on average lower, than LCAG management (76%). Therefore significant change was also admitted. Process feedback shows that due to the new solution implemented, employees started to spend less time for creating trip-files. Majority admits that their working routine becomes better, and minority is undecided about this criterion. We can state, that no negative effects on work routine was spotted. All operational employees admit that with the new creation process it is much more difficult to make a mistake in trip-file. Therefore it proves improvement of documentation quality. Swissport employees have rather neutral opinion and do not express strong views towards the process preliminary work, except one criterion. They all agree that project questioning process was efficient. Regarding the process implementation employees also keep neutrality, except that implementation was rather welcomed, then antagonistic. Among possible GHA's future facility and software improvement need there were not recognized and given certain priority. All options were ticked as important but not at the extreme values. One thing that was clearly disregarded as facility improvement is a

waiting room for RFS's drivers. Interview with employees did not bring additional informational related to the project. Same positive attitude towards project performed was expressed but without specific additions.

7 Conclusions and recommendations

7.1 Conclusive remarks

At the beginning of the thesis four questions were formulated in order to understand context of the action based research.

What is an export flight preparation process?

Clients of cargo terminals are airlines, freight forwarders and mail companies. Mail companies are charged differently from freight forwarders and airlines. Mail companies usually have all-in rate and different contract of carriage (delivery bill). Freight forwarders are charged accordingly to the price list which is easily available on-line and also pay terminal fees per kilo plus any possible security checks and cargo export/release fees. Air companies are bringing customers to the cargo terminal, and therefore terminals have competition for airlines. Price level for airlines is confidential.

What types of agents does a cargo airline have?

There are two types of agents for airlines. GSA - general sales agent and GHA – ground handling agent. Depending on the operation scope Airline might be presented at the station with own sales office and ground handling. Second option is to have own sales branch present, but ground handling activities outsourced (to GHA). Third option is applicable if station is new or operational scope is small. Airline does outsource sales to the GSA and ground handling to the GHA.

What is C2K industry's standardization benchmarking tool and how does the informational flow function?

C2K is industry benchmarking and process standardization tool. In order to identify moment of the mistake, route map is breaking-down to the 7 milestones. C2K in author's opinion simplifies complexity of the Master operating plan and makes it more understandable. There are many transactions behind the C2K milestone, and there are much more processes behind transactions. Furthermore parties involved in the transportation have different IT systems, and in order to understand each other parties generate messages according to CIMP. Cargo communities HUBs are also helping to foster information flow. All these complications allow to ship goods by air fast and safe.

What is main document, which regulates contractual relationship between airline and ground handling agent? How does this document regulate the relationship

Standard ground handling agreement (SGHA) is the main contract between Airline and GHA. It is designed by IATA for simplification and standardization of the agreement, and services mentioned in the agreement. Current SGHA version is 2013 and it has been renewed every 5 years.

What is an export flight preparation process?

Flight preparation and particularities were described in chapter 4.3.2. It is complex and oriented on security and information flow acceleration. Passenger's flight preparation for cargo is most complex, and cargo capacity estimation in author's opinion is more like a gambling. Fortunately, for "handling and quality" internship applicants this thesis will be useful source of data, and possible advantage among other applicants. For freight forwarders, understanding the complexity of processes, will give a competitive advantage in booking correct products or possibility of foreseeing obstacles in transportation.

It can be concluded, that project which was performed and solution implemented is a success. Project result was possible to reach due to the maximum use of GHA's IT system. Processes' "bottle necks" were identified by analysing project's context. Three solutions for the problem were developed and one of them selected for implementing. Three phases of the solution's implementations were developed and thirist one implemented during author' internship. Both quantitative and qualitative measures are supporting project outcomes. In quantitative measure significant decrease of mistakes was achieved plus archiving mistakes were eliminated completely. In qualitative scale

measure all parties involved admit positive outcomes of the project. A new level of economical sustainability was achieved by Swissport, and new level of documentation quality was achieved by LCAG. Also new social sustainability level was reached by LH-team. New process knowledge was discovered after project implementation, negative though. Weak spots and processes misunderstanding were spotted and eliminated, which finally led to development of Swissport's competence. Last but not least, author of this thesis gained a new and unique inside knowledge, about air freight.

7.2 Recommendations

The project solution was not fully implemented. Only one phase out of three is currently put in place. Second phase is expected to be launched soon. Phase three is scheduled for 2017 and by author's opinion is the most complicated and exciting. Phase three is supposed to replace hard copy documents with electronic document flow system and make it possible to use tablets by warehouse workers for acceptance checks and product specific checks. Thea author highly recommends to continue this project and not to stop on benefits, already gained.

As a result of this thesis a need for a new project was detected. The selecting of documentation flow system is a phase three of current project, new project itself and a new challenge for Swissport Company.

There are four steps, recommended by R. Johnston (2003) to follow, when you are selecting new software. Steps are; establish a technology advisory committee, prepare needs analysis, consider engaging an independent consultant, and talk with your current vendor.

At the first step, when company realizes, that there is a need in additional functionality to the existing program, an internal advisory committee must be established. Committee must consist of the management and employees, who are facing difficulties in day-to day routine because they know better what issue really is possible to optimize workflow.

At the second step company should describe in details what issues are and how they must be solved. At this stage it is wise to understand what type of document management system is needed for business. There are three types of document

management systems. The first is imaging system – converts paper documents to electronic files. The second is software only system – provides management of files in electronic format. The third is combination – imaging and software system combined (Brooks, 2016).

At the first glance it seems that for the needs of business operations Swissport needs only imaging system. There are many documents arriving to the Swissport in hard copy; air waybills, agent's dangerous goods declarations, and veterinary certificate for live animal transportation, etc. These hard-copy documents are stored in trip-file. If something happens during goods transportation and a need arises in such documentation for an operational recovery or track and trace actions, then Swissport employees will pull them out of archive, scan and send to the recipient. Such things happen quite often, and these facts foster the need for document management system. On the other hand operational messages are done in the IT system Cargospot, designed by CHAMP. They are stored there and might be forwarded to any interested party if there is a need. Electronic files, word document and excel tables are not common for Swissport's routine; Therefore there is no need to get control on those. Some distinctive features of document managing system are presented in Figure 29.

- Storing various document types, including word-processing files, emails, PDFs and spreadsheets
- Creating new files directly within the system that can be edited and shared with others
- Searching an entire library of files by individual keyword
- Sharing documents with co-workers, departments and clients
- Restricting access to certain documents
- Monitoring who is viewing documents and when
- Tracking edits being made to documents
- Retrieving previous versions of edited documents
- Controlling and regulating when out-of-date documents can be deleted
- Accessing, editing and sharing documents via mobile devices

Figure 29. Document management system distinctive features (Brooks, 2016)

Company needs to understand that document managing system is more than online cloud storage. It is the system with possibility to grant or restrict editing rights and track file's modifications.

The third step to consider is to engaging an independent consultant. This could be business partners as LCAG, who can share their own ideas, visions and solutions for current issues. What is vital for this step is, to find a software expert either within or outside of the company. There must be clear understanding of what company is going to buy. Several key points for research are described by Brooks (2014) in his article. There are three key blocks of elements for document managing system to be reviewed before implementation: Internal software specification, external software specifications and hardware needed. These blocks and sub-elements are presented in Table 2.

Table 2. Document management system's key elements (Brooks, 2016, adapted)

Internal software specification	external software specifications	Hardware specifications
Filing structure	How many companies do use the system currently	Scanning solution
Team collaboration with system	Does it have future-proof architecture?	
Cloud based interface	Does it integrate with other company's software?	
Compliance with regulations and authorities	Is it scalable?	
Disaster recovery		
Custom user configurations		

First group of software elements are internal software specifications. For exploring these key points responsible person must be advanced IT user or external IT-specialist must be engaged in the process.

Firstly, it all starts with understanding of the software logic behind the interface, how it is copying physical filing pattern. The second topic is: How the software allows team to work synergistically, and how the access to the documents is implemented. Next important feature is to discover whether cloud services are enabled or not in the software. This is a contemporary trend and almost "must-have" option for the software. There have to be a secure and remote access to documents outside of the office. Next element "compliance with regulations and authorities" is important if company wants to go completely paperless. In such a case software must comply or be certified by

appropriate authorities for complete paper-less document flow. Disaster recovery comes along with cloud services. There must be a back-up server somewhere outside of the office in order to protect electronic data from floods and fires. Last element in internal software specifications column is custom user configurations. It means that system must be flexible, and take shape form and if necessary logics of company's business processes and flow, not the other way around.

Second column of table three provides us the evaluation criteria, which might be obtain without digging into the program. First key point is how many companies do use the system on the market. It gives the understanding of the maturity of the system. In addition, it gives a possibility to collect feedback before implementation. It is wise to look around the company's industry, because of the specificity of ground handling business and collect feedback if it is possible. Next important thing, which is possible to get out of software specification, is whether it is cross-platform software. Does the system have possibility to run on other operational systems? What about other mobile devices and tablets? How it would be possible to implement it in the warehouse? It is particularly important because there was a case with one LCAG's software, which was not possible to run on the tablet and therefore could not be used in the warehouse.

Software's vital feature is how system will be able to discuss with main company system Cargospot. Last element of the second column "is it scalable?" means that if company grows, will the system grow with the company or company will be forced to implement a third-party solution.

Worth to mention that document management system is not only about software. For the needs of document management system Swissport would need a special hardware. Regular scanner is a good for a single document's digitalization. If Swissport is going to become paper-less, then we talk about hundreds of documents per day. Therefore this activity must be as automated as possible, not creating extra job by itself. Furthermore, documents usually arrive not in the perfect shape and form. Therefore, investment in special scanner device such as ScanSnap iX500 Deluxe from Fujitsu is a must investment for going paperless.

The fourth step in the software selecting process is to talk with your current vendor. This means that before doing any moves, try to fix the issue with the current vendor. There is a trend in the airfreight to become paper-less as much as possible. CHAMP is

the company, who has designed the Cargospot, main IT-system of Swissport worldwide. Therefore, it is wise to start searching from current vendor, CHAMP. Factually, there is a solution, designed by the CHAMP, called “eCargo Pouch”. This program complies with IATA’s e-freight program. It is a cloud-based and can handle both electronic messages from Cargospot and supporting documents such as invoices, acceptance check sheets and etc. (Champ.aero, 2016). At the first glance it looks like a perfect solution for the problem. This is where author recommends to start the search from.

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Live Warm-blooded animal acceptance checklist example

LIVE WARM-BLOODED ANIMAL ACCEPTANCE CHECKLIST

Air Waybill No.: _____ Origin: _____ Destination: _____

Gross Weight: _____ Dimensions: _____ X _____ X _____

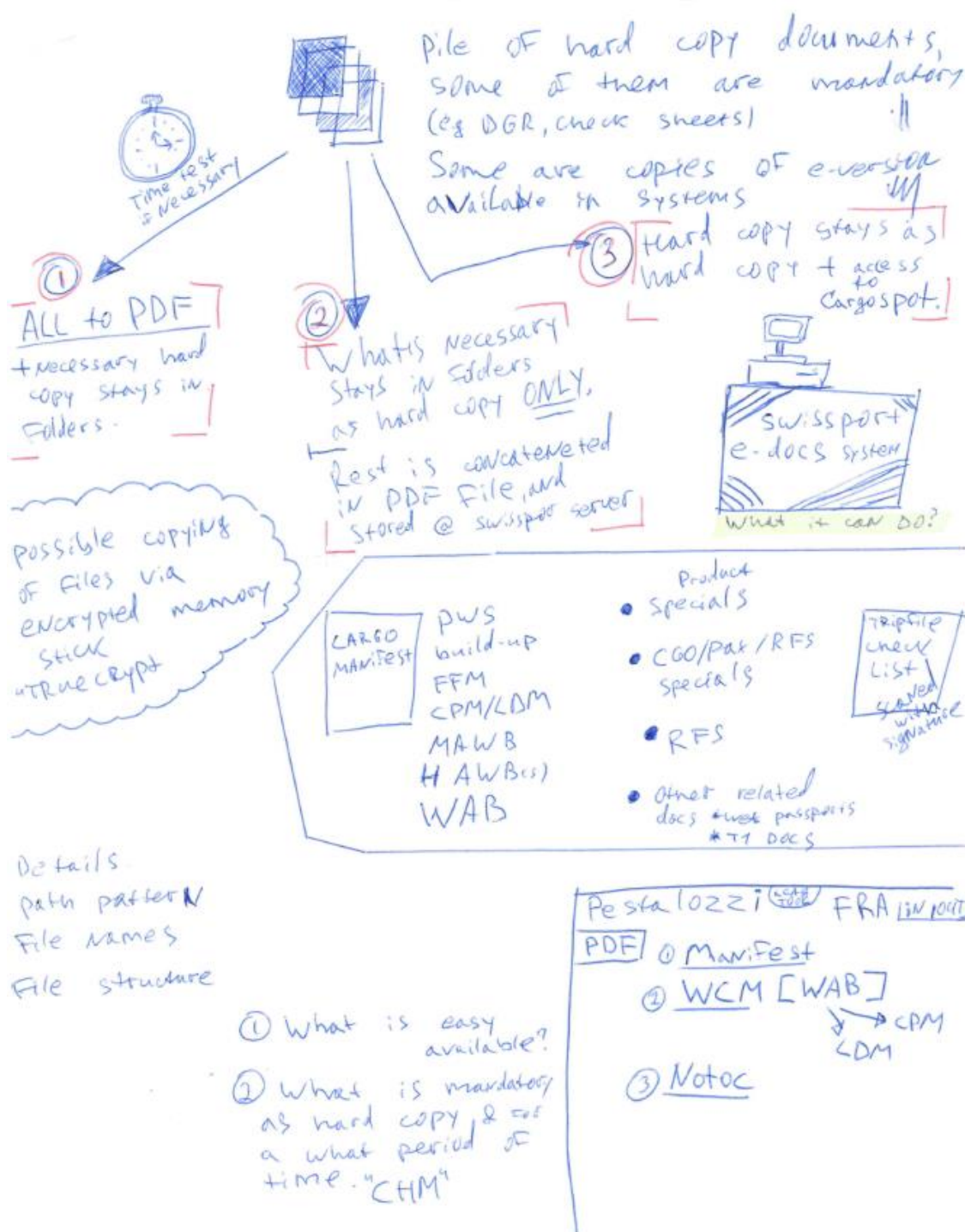
☐ All questions must be answered, do not use "N/A" unless a box is provided.
☐ If any question is answered "No", the item must be corrected prior to shipment acceptance.
☐ Review all items with the customer before rejecting an animal.
☐ File the checklist and copies of all documentation (as required in the booking record) with the origin station air waybill

General Acceptance	Yes	NA	No	Container (continued)	Yes	NA	No
1. Is the shipment booked in CargoTrac? If no, contact PetSafe to book	<input type="checkbox"/>		<input type="checkbox"/>	16. Does the kennel have 2 food/water dishes?	<input type="checkbox"/>		<input type="checkbox"/>
2. Is the animal tendered 4 hours or less before the booked flight?	<input type="checkbox"/>		<input type="checkbox"/>	17. Does the kennel have sufficient ventilation including rims around the kennel to prevent ventilation openings from being blocked?	<input type="checkbox"/>		<input type="checkbox"/>
3. Will ground transfers be made within 45 minutes if the outside temperatures are above 85° F/29.5° C or below 45° F/7.2° C?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note: Ventilation must not be covered and: - on all four sides internationally - on at least three sides domestically			
4. Are the aircraft in the routing approved to transport live cargo and able to accommodate the kennel tendered (#700 kennels only on CO WB, 757's and 737-700/800/900)?	<input type="checkbox"/>		<input type="checkbox"/>	18. Is there sufficient space to allow the animal to turn about freely, in a standing position, using normal body movements, and to stand, sit, and lie in a natural position?	<input type="checkbox"/>		<input type="checkbox"/>
5. For dogs and cats is the animal at least 8 weeks old (as stated on the health cert)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note: For brachycephalic (short nosed) dogs, is the animal in a 1 size larger kennel?			
6. Customer confirms that the animal has not been tranquilized?	<input type="checkbox"/>		<input type="checkbox"/>	19. Is the number of animals per kennel within the limits prescribed by the regulations?	<input type="checkbox"/>		<input type="checkbox"/>
7. Customer confirms that the animals are not being shipped for use in fighting ventures?	<input type="checkbox"/>		<input type="checkbox"/>	Note: Limits are found in the IATA Live Animal Regulations. For cats and dogs the limit is one adult (dog or cat) or two puppies or kittens under 6 months old, under 20 pounds and of similar size.			
8. Verified that there are no visible signs of a pre-existing condition, illness or evidence of recent surgery? If present – do not accept	<input type="checkbox"/>		<input type="checkbox"/>	Marking and Labeling			
Documentation				20. Are the names, addresses, and telephone numbers of the customer at origin and destination, as well as the name of the animal affixed to the top of the kennel?	<input type="checkbox"/>		<input type="checkbox"/>
9. Does the shipper have a valid health certificate, dated no more than 10 days prior?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21. Are properly sized orientation labels affixed to the kennel on at least 2 sides?	<input type="checkbox"/>		<input type="checkbox"/>
10. Have you received all documentation as listed in the CargoTrac booking remarks? Examples: CITES permits, country import license or permits Note: Contact PetSafe for any discrepancy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22. Do the words "LIVE ANIMAL" appear on the top and at least 1 side of the kennel with the letters a minimum of 1 inch high?	<input type="checkbox"/>		<input type="checkbox"/>
Container				23. Are food and water instructions posted on the top of the kennel with indication as to when the animal was last offered food and water?	<input type="checkbox"/>		<input type="checkbox"/>
11. Does the kennel meet IATA standards as required in the Live Animal Regulations? Note: Handles cannot be covered with labels or pouches.	<input type="checkbox"/>		<input type="checkbox"/>	Note: Continental will provide water as needed, but will only feed once every 12 hours provided the shipper sends food and it is accessible from the outside of the kennel.			
12. Does the kennel have easily accessible openings for the removal of the animal?	<input type="checkbox"/>		<input type="checkbox"/>	Signature of Shipper _____			
13. Is the interior of the kennel clean and dry with adequate absorbent material?	<input type="checkbox"/>		<input type="checkbox"/>	Signature of Accepting Agent & Employee Number _____			
14. I have secured the kennel with releasable cable ties? Note: Door requires a minimum of 4 ties, one on each corner. All sides should also be secured to ensure the kennel will stay in tact and protect the animal during transit	<input type="checkbox"/>		<input type="checkbox"/>	Time _____ Date _____			
15. Are only permitted items (less than 16 oz of food for the animal, 1 leash, 1 collar) securely attached to the outside of the kennel? Note: Toys or medication of any kind (OTC or prescription) are not permitted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

FS-556 Revision 11/08

(Advocate, 2016)

Process change concept mapping



Lufthansa Cargo

Networking the world.

Trip-file Project's results evaluation. Qualitative questionnaire

Background (circle the answer)

1. Which Organization do you represent?

1. Swissport (Management) 2.LCAG (Management)
3. Swissport (Workers)

NOMINAL SCALE

Trip-file project processes and outcomes evaluation

2. On scale from 1 to 5 (1 very dissatisfied, 5 very satisfied) rate the solution implemented, and the overall outcome of the "trip-file project"?

1 2 3 4 5

ITEMIZING RATING SCALE

3. How would you rate effectiveness of data transmitting improvement? (Mark an X)

Insignificant _____ Splendid

CONTINUOUS RATING SCALE

4. How would you rate effectiveness of document quality improvement? (Mark an X)

Insignificant _____ Splendid

CONTINUOUS RATING SCALE

Trip-file creating process feedback *(part exclusively for workers)*

Please underline one answer which match your opinion on following questions

5.0 With new "trip-file" creating process I spend more time for creating a single trip-file.

Strongly disagree Disagree Undecided Agree Strongly agree

5.1 With new "trip-file" creating process my work routine become better

Strongly disagree Disagree Undecided Agree Strongly agree

5.2 With new "trip-file creating process" it is much more difficult to make a mistake in trip-file

Strongly disagree Disagree Undecided Agree Strongly agree

LIKERT SCALE

Personal attitude towards the project. Mark the most appropriate answer at the blank with an X.

6.0 Express your attitude to the trip-file preliminary process (gathering information, discussing, and feedbacks).

Distressing _ _ _ _ _ Joyful

Downwards _ _ _ _ _ Encouraging

Inefficient _ _ _ _ _ Efficient

6.1 Express your attitude to the trip-file process outcomes implementation.

Slow _ _ _ _ _ Fast

Bureaucratic _ _ _ _ _ Easy

Antagonistic _ _ _ _ _ Welcoming

SEMANTIC DIFFERENTIAL SCALE

Improvements

7. Below are listed statements about possible future improvements, which are needed for performing GHA activities/customer service more efficient. Please mark the most appropriate answer following the scale 1 to 5, where 1 completely disagree, 5 completely agree.

	Completely disagree	Disagree	Undecided	Agree	Completely agree
Tablets must be used by terminal at acceptance (possible W+M tool, and other extra tools)	1	2	3	4	5
Tablets must be used by terminal for Build-up (replacing build up list)	1	2	3	4	5
"3D gate" is the first priority investment	1	2	3	4	5
e-Document circulation, for fast and easy access to each document relevant for the flight (special software needed)	1	2	3	4	5
Waiting room for truck drivers(Kettle, Micro, Wi-Fi)	1	2	3	4	5

LIKERT SCALE & RATING SCALE

Here below you can write other comments and suggestions about project and persons involved. **Thank you for your feedback!**

